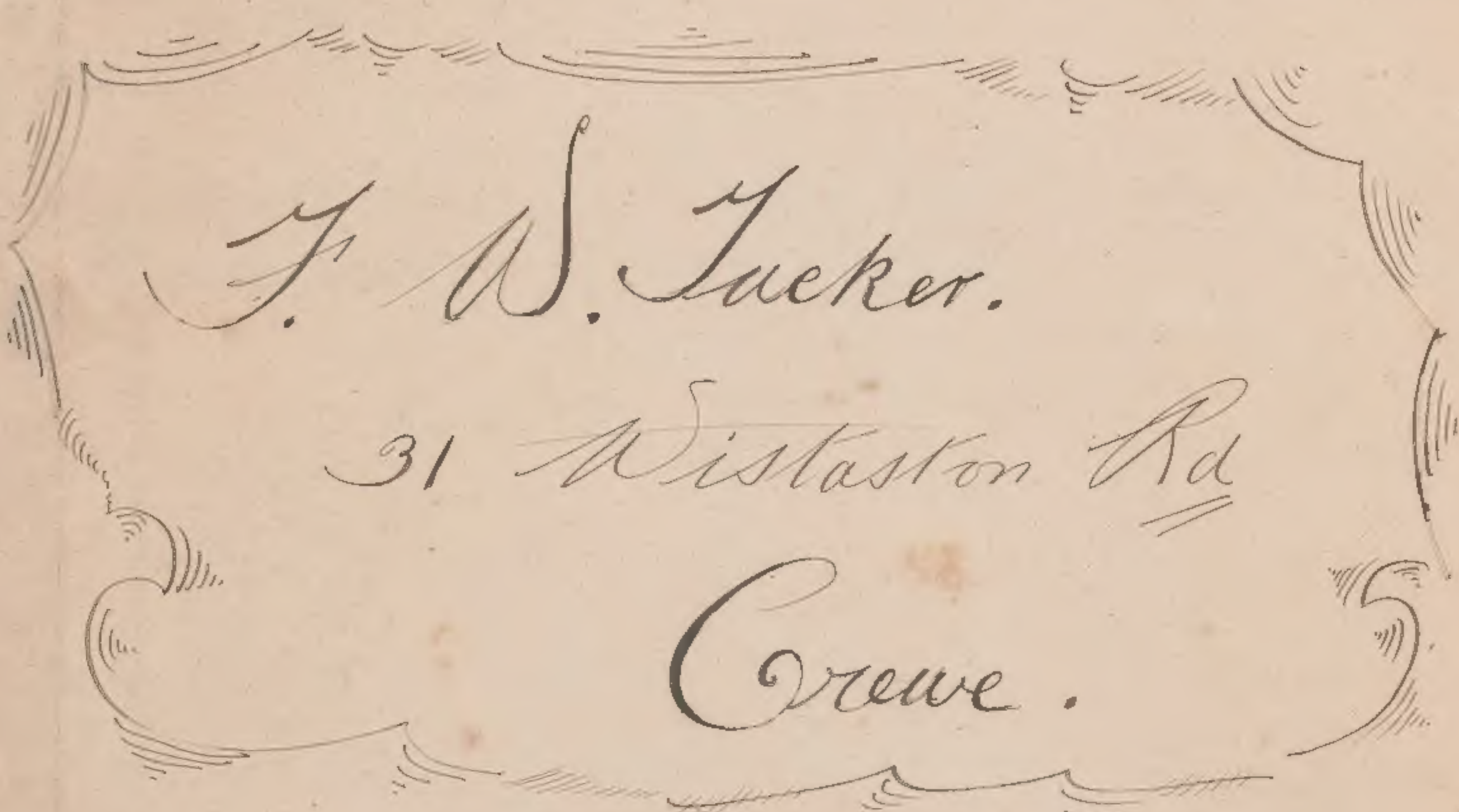


THE
NEW
SYSTEM
OF
GLASS
EMBOSSEMENT

BY
J. W. G. & CO.
LONDON

1850



A decorative, hand-drawn border in pencil or light ink, featuring a series of connected, slightly curved lines that form an irregular, oval-like shape. The border is embellished with small, parallel hatching strokes at various points, giving it a delicate, sketchy appearance.

J. W. Tucker.

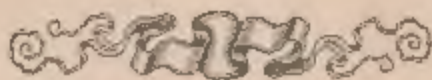
31 Wistaston Rd

Crewe.

THE
Sign Writer
and
Glass Embosser

BY

W. & W. G. SUTHERLAND.



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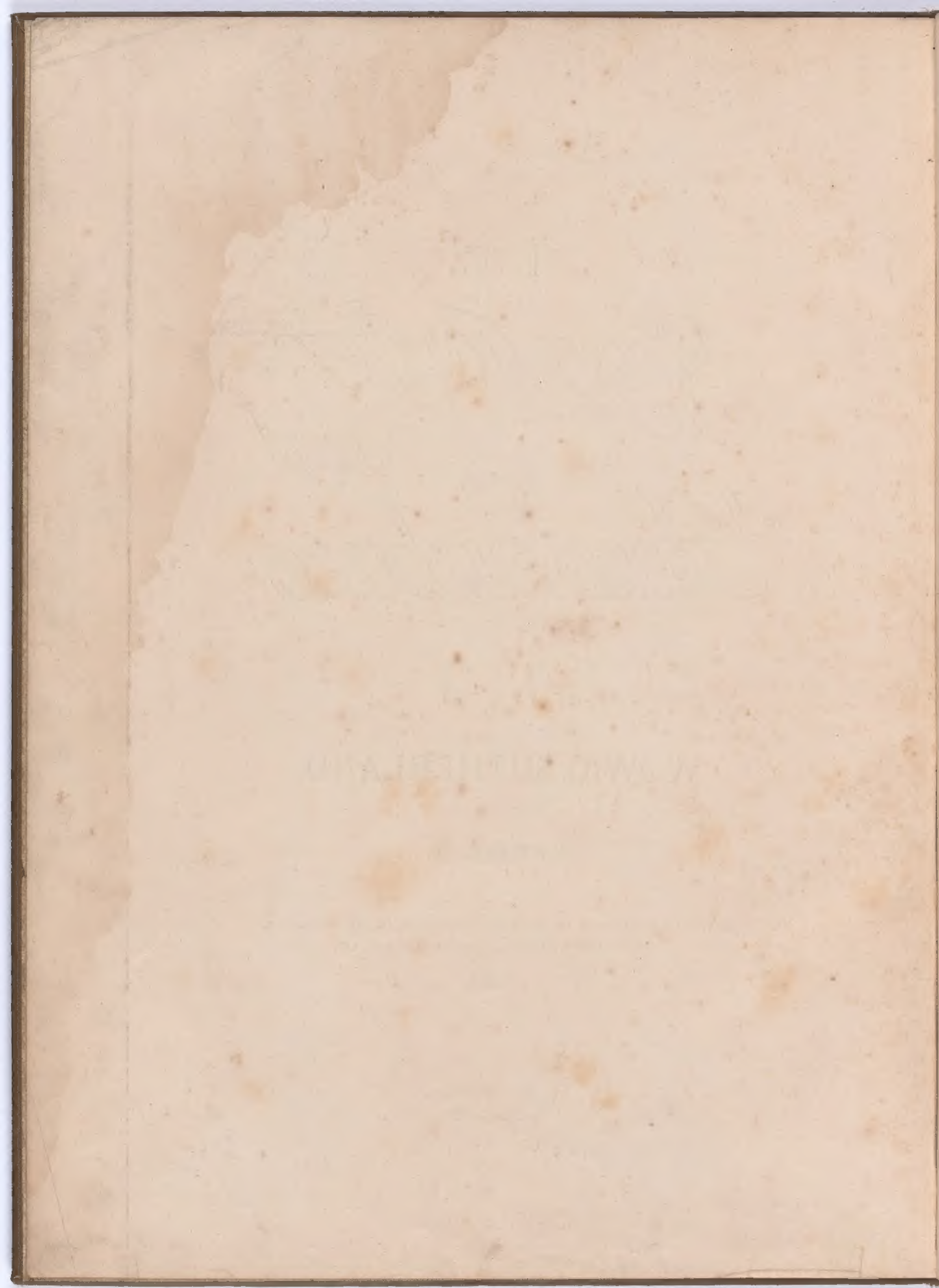
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THE Sign-Writer and Glass Embosser.

BY
W. & W. G. SUTHERLAND

INTRODUCTORY.

CHAPTER I.



Signs of
great
antiquity.

Some old
symbolic
signs still
remaining.

OUR aim and object in this book is to give sound practical information: we shall, therefore, not occupy our space, any more than is absolutely necessary, with dissertations on the merely literary and speculative part of the subject. But it will not be out of place if we dwell for a moment upon what may be aptly called the historical side of it.

Signs and tokens are as "old as the hills"; or, at all

events, as old as human intelligence. The savage in his wildest and most primitive state, describes what he wishes to be known in rude hieroglyphics, and makes his marks, and pictures of animals, intelligible enough to those they are intended for. The ancient Egyptians and other old-world nations, in this respect, copied the savage to a great extent, as shown in their works yet remaining to us.

Coming down nearer to our own day, we find that signs and tokens were in extensive use by our ancestors—not signs as we know them, but actual representations either in painting or carving of the things they dealt in, or the craft or profession they followed. Of this custom, we have still many examples in use: Such as, the barber's pole; the

figure of a black man holding a pipe at the door of the tobacconists' shops; the chequers, painted on the door-posts of some of our oldest inns or taverns; the fish dangling at the end of the rod and line outside the shops of the fishing-tackle dealer; the coloured bottles in the druggists' shop window; the three balls of the pawnbroker, &c., &c.

In those old days, lettered sign boards were not in use, or very rarely so. The sign-writer proper had not made his appearance; he was then a sign-painter, and not a sign-writer, as we know the trade. At first, the name would be written at the bottom of the picture-sign, but it gradually encroached upon the picture, until it replaced it altogether, except in isolated instances, until sign-writing as a trade became, as at the present day, a universal want.

We confess to a regret that the sign-painter's—as distinguished from the sign-writer's—art, has disappeared. There was much that was crude and primitive in these old signs, but they prompted the painter to a practice which must have been educational to those who indulged in it.

The spread of the knowledge of reading and writing, has no doubt contributed to bring about this consummation. Picture-signs were well enough at a time when men who could read were the exception, and those who could not, the rule.

Nowadays, those who wish to succeed in any business or profession must advertise themselves—let every passer-by know what they do and what they sell; and thus sign-writing has become not only an important Art, but of great commercial value.

To a very large extent the art of sign-writing is a mere mechanical art. The forms of the letters are fixed and arbitrary in shape, although capable of being modified to a certain degree by each individual sign-writer. It is with letters as with hand-writing, each practitioner imparts to his letters the sympathy and impress of his own individuality or style, in their curves and serifs; still retaining, as he must, the primal shape of the letter. This he cannot get away from, or else his letters are apt to become ridiculous

The picture
the thing.
Revival of
painted
and figure
signs.

A plea for
painted
signs.

Education
altered all
this.

Advertising
a necessity.

Sign-writing
a mechanical
art.

Primal
shapes of
letters fixed.

and miss their main purpose of announcement. It is in this sense only that sign-writing is mechanical, for the shapes of the letters are fixed, and very little variation is advisable. These shapes being universally adopted and recognised, we have only to acquire a thorough knowledge of them (and when once learned they cannot be forgotten) to enable us to form any kind of letter. It only needs an observant eye to detect how very widely and diversely these fixed shapes can be rendered. One man will destroy all the grace and beauty in them; another will excite our admiration by the subtlety of his curves and the proportion he imparts to his letters; a third will associate a particular character with his work, which takes it away from the common-place, whilst preserving the generic shapes.

How not to
do it.

Albert
Durer's
methods.

The letters and shapes being thus fixed, it will seem almost a contradiction of terms to say that we do not require the aid of the compasses or mathematical instruments to form them, and that the free-hand drawing of them is the best system of acquiring that power. We are, indeed, told by one author—who has published a book to prove his system to be the best—that the only true way to form letters is to set out your board in squares, and count so many squares to each letter; and in the series of examples he gives to prove he is right, he most conclusively proves that he is wrong, inasmuch as the S and the R are, in every case, much thinner in the middle part than in the tops and bottoms. The tops and bottoms occupy a full square, and the middle stroke in one case a quarter of the thickness, and in the other a third.

A roundabout
way.

The judg-
ment of the
eye and hand.

Now, this is decidedly wrong, and utterly destructive of all grace and beauty in the letters, and can result in nothing but unmitigated ugliness. In fact, the said author could have given no stronger illustration of the futility of his system than the examples he has given to support his theory in practice. This is apparent from the fact that a man might set out and write a sign in the time that it would take him to form the squares on the board before he could even write a single letter.

Another
mistaken
way.

Another writer on the subject, whose book in some respects is admirably written—from a literary point of view—and who quotes very largely from Mr. Camden Hotten's history of sign boards, tells us, and shows by elaborate diagrams, that letters should be formed on strictly geometrical principles; and to prove this, gives us examples embodying a multiplicity of lines, radiating from different points—a process which involves an amount of time and trouble utterly superfluous in practice. It is not desirable in the practice of an art which is so dependent on a fine sense of beauty of line to fetter it down to drawing on squares, although for the beginner, who is working with pen and ink, it may be found helpful. The great Albert Durer did not refuse to use it when drawing his letters, so there may be a justification for it. But even the use of squares must only be an aid to the making of the letters beautiful, not be regarded as the end of it all. We may, therefore, leave these gentlemen with the remark that the first seems to have got a crotchety, which he has worked out to his own satisfaction, and the other is simply a book-writer, who has culled his information from all the sources available to him, in order to make a book.

We may now return to the fact to which all experience bears testimony, that a thorough knowledge of the various styles of lettering, obtained by educating the eye and the hand, is the only true method to make a first-class sign-writer. The knowledge of setting-out and shading will come afterwards, and it is to these parts of our subject we shall direct our teaching, as being, apart from the formation of the letters, the most important parts of the subject.



CHAPTER II.

WHAT A SIGN SHOULD BE.



IGN boards having become a necessity for the due and efficient carrying on of our businesses, we may (before passing on to the strictly technical part of the subject) profitably spend a short time and appropriate a small share of our space to the consideration of what a written sign ought to be, and what it ought not to be.

What we
aim at in a
sign.

In putting up a sign board outside our business premises or elsewhere, we have a definite object in view—namely, to let the public know what our business is; what we sell, or what we do; what business or profession we belong to; and which of the thousand-and-one wants or necessities of the human family we are prepared to supply.

The object and purpose, therefore, being to supply information to the public, it will be evident to everyone that this object will be best attained if we make our letters as distinct and readable as possible, so that he who runs may read, and except this be the case the purpose for which the sign was written will not be fully achieved. This does not necessarily exclude the use of all but plain letters, although it does require that all the letters used should be plainly readable. It follows therefore, as a matter of course, that a sign should be legible, and capable of being easily read by all classes, and the letters well defined and properly spaced in relation one to the other. The different lines of letters, when there are more than one, should be well contrasted in size, which will give to each line additional emphasis and distinctness; and, when it is possible, each line of letters should be of a different type. And here it may be desirable to say that the setting out of a sign is quite a distinct thing to the setting up of a displayed printed placard. The rules and conditions which govern the two are different, and whilst they have something in common they have also each its own distinctive qualities and conditions.

Signs
should be
legible.

A PROPER CONTRAST OF LETTERS TO BE OBSERVED.

As a matter of course, it is understood that large letters read better from a distance than small ones; but even this fact is often neutralised by the large letters being overcrowded and condensed, until it is often difficult to read them at all. In this case a smaller letter, properly spaced, will be read at a greater distance than the larger one. This arises from the fact that closely-written letters will appear still closer the greater the distance we are from them; but when they are properly spaced, although they will still look closer at a distance than near, they will not become confused like the former.

The value
of good
spacing.

REQUISITE CONDITION OF A GOOD SIGN.

We see, therefore, that a sign, to fulfil all the conditions of a good sign, requires to have the letters of a good readable type, and placed or spaced so as not to crowd one letter upon another as we so often see them; and that when there are several lines of letters on the same board, each line should be different to the others, either in size or form, thus the one making the other more distinct and easily read by the force of contrast. On the other hand, we may set it down as a fundamental rule of sign-writing:

Avoid
crowding.

Lines diffe-
rentiated.

1st. That a sign should *not* be overcrowded with words, but should be as concise and comprehensive as the nature of the case will allow. Many signs are stultified by this fact alone, as people have neither the time nor inclination to stop to read a sign if it has too much matter upon it.

2nd. That the letters themselves should not be crowded.

3rd. That the letters used should not be of such a character as to present any difficulty to any person in the

Distinctness
a necessity.

THE SIGN-WRITER AND GLASS EMBOSSEY.

3

reading of them. A sign of this kind—while unfortunately too common in our streets—most certainly defeats the purpose for which it is used.

We may, then, with certainty, lay down a set of rules for our guidance in practising the art of sign-writing which, if faithfully observed, will be useful and beneficial, and enable us to avoid many errors which even practised sign-writers sometimes fall into.

RULES FOR PRACTISING SIGN-WRITING.

READABLE LETTERS THE BEST.

RULE 1.—When writing or setting out a sign for business use, we should always bear in mind that we are painting an advertisement board, and, as a consequence, we should use only plain, readable types of letter for that purpose, in order that what we do write shall be easily read, and whatever variation or play of fancy is given to the letters, it should all be subject to this one fact.

SPACING.

RULE 2.—All the letters of a word should be so regulated or "spaced" as to avoid crowding the one on to the other, and thus making the whole difficult to read. It is a mistake to keep the letters too wide apart.

CONTRAST.

RULE 3.—The different lines of letters should always contrast with each other, either in size or shape, as we thus give greater distinctness and effect to each line.

THE PROMINENT LINES.

RULE 4.—In setting out a business sign, the name of the person and his business should appear the most prominent feature of the whole, and the other words be kept subordinate.

COMMENCEMENT AND ENDING OF LINES.

RULE 5.—We should never commence or end a line of letters on a sign board with such words as *of*, and *but*; but should arrange for them to come in between the larger and more important lines of letters. This rule, of course, does not apply to church tablets and notice boards, which are covered with small letters, but is a safe and necessary rule on all business signs, which should be comprehended at a glance.

SHADED LETTERS.

RULE 6.—When raised or shaded letters are used, care must be taken in the setting out of the letters, to allow for the extra space this will require. If we neglect this precaution we produce an over-crowded effect, causing confusion.

THICK AND THIN STROKES.

RULE 7.—The thick and thin strokes of a line of letters must be kept of a uniform strength throughout. The simplest means to effect this will be pointed out in another portion of our subject.

LETTERS UPRIGHT.

RULE 8.—Except a line of letters are in italics, or purposely drawn on the slant, every care should be observed to keep them perfectly vertical, for nothing shows the unskilfulness of the workman so clearly as making what should be upright lines, tumbling some one way and some another.

SQUARE SHARP FINISH.

RULE 9.—We should always endeavour to finish off the letters sharp, square, and correct in the lines, the ends of the serifs square, and the curves true. Nothing contributes so much to the beauty and pleasantness of the work as this. It is always a proof of careful and good work. On the other hand, nothing condemns work sooner than such a slovenly, slipshod, careless way of doing it, and yet with practice it is quite as easy, and takes as little time to do the work well as to do it in a slovenly manner.

CORRECT SPELLING AND PUNCTUATION.

RULE 10.—Before commencing to set out a sign, we should make sure that the inscription or matter we have to put upon it is correctly spelt, punctuated, and arranged, and a decision arrived at as to which lines shall be the most prominent and read most plainly. Many blunders have been perpetrated in this matter which have not been noticed until the sign has been finished, and which have caused much trouble, annoyance, and expense to rectify.

RULE 11.—Every line of letters should be placed centrally on the board, measuring from side to side.

CHAPTER III.

HINTS FOR STUDENTS—METHODS AND PROCESSES.



As laid down in our last chapter a set of rules applicable to, and which must be observed in, the practice of sign-writing in order to make good work.

We have now to describe the methods of doing the work. Different men have different ways of getting at their work, and most men of any originality of mind, or who are possessed of any inventive power, adopt some peculiarity or method of working which belongs to themselves exclusively,

the same method or style becoming the special mark of their individuality. This, as we know, is the case with the handwriting of every man who can write—no two will be alike; and this is especially the case with picture painters—no two artists paint exactly alike, and this is often so marked that each painter's work may be distinguished amongst thousands of others. The man, if he is truly an artist, marks or stamps unmistakably upon his work this peculiar sign of his own individuality, and so it is with all branches of the useful arts in which a man's talent and skill have free play.

In the art of sign-writing, although, as we have before pointed out, it is in a great measure mechanical, yet there is full scope for the exercise of each man's peculiar bias or style in the formation and embellishment of his work.

As we are writing here for the special benefit of the young student, we shall begin at the beginning, and there will be no loss of dignity in older men turning back to practise straight strokes and simple curves. Many persons who dub themselves sign-writers have the greatest difficulty in making a straight line or a true curve, and yet without the power of doing this—and doing it correctly—no man can make a good sign-writer. We have read somewhere that a celebrated master, the head of one of the great musical colleges on the Continent, would always make his pupils practise incessantly a certain piece of music, simple in its character, but which with all its simplicity contained within itself the very elements of all musical composition. He would keep them repeating the same piece for months, and even years, until they could execute it perfectly. When this had been accomplished, he would say to his pupil: "There, there, that will do. I cannot teach you anything more. You will now be able to execute correctly and at sight the most difficult composition that can be set before you."

Now, this is just exactly the case with sign-writing. If the young student will practise the making of straight lines and curves—of which all ornament, and indeed all and every combination of forms is composed—until he can do them correctly, and with ease, he will then be able to form any letter in any type. Many sign-writers have taught themselves the art by first forming the letters on paper. This is not a bad plan to acquire a knowledge of the shape

Divers methods of working.

The value of straight lines and curves.

Sketching letters on paper.

Practise with
the pencil
and paint.

of the letters, but as the sign-writer has to form his letters with a hair pencil and paint, it is better for him to begin at once to practise upon the painted board with pencil and paint; he will thus become habituated to the use of the pencil and mahlstick, and acquire the necessary skill to form his letters with freedom and correctness. In addition to this, we would strongly advise the student to adopt a plan which will facilitate his acquirement of the exact form of every kind of letter, and assist him in many other ways besides—a plan which, if constantly carried out, will do more to give him the necessary freedom of hand and knowledge of form than any other course we are acquainted with.

It has been the habit of most men who have attained an eminent position in the world to keep a diary in which they have recorded anything that came under their observation and that was worth preserving in their daily life. Now, this is exactly what we would advise the student of sign-writing, or indeed of any other department of the decorative arts, to do.

Pocket
diary or
sketch
book.

Procure a blank paged pocket-book, or one of the ordinary sketching-books, and of such a size as to be always convenient to carry in the pocket, both at work and play; in this book the student should make a practice of sketching any letters he may see, scraps of ornament, or anything else likely to be useful to him in his practice. He will find this a most valuable habit, not only as a help to the acquisition of a knowledge of sign-writing, but as an aid in teaching himself how to make a fac-simile drawing of anything and everything; and when this knowledge of form and skill of hand is once acquired, there is no limit to its usefulness in any walk of life.

Advantages
of a note
book.

Even when only pursued for amusement in leisure hours, it affords an occupation of pure pleasure not surpassed by any other accomplishment. No teaching of the schools can better this method for giving the student that facility of execution, correctness of line, and freedom from conventionalism so valuable and so necessary to the draughtsman in any line of business into which drawing enters. The advantages of this plan will be evident to the intelligent student, and if, in addition to the sketches he makes, he will add a few words of descriptive matter relating to the subject of his sketch, he will thus form a sketching diary which will be found most valuable to him for reference at any future time.

Board for
practising.

In practising sign-writing, a sign board will be required. This, in the first place, may be of the simplest construction, two or three feet wide and about four feet long. When this is not attainable a single board may be used. This should be made smooth and painted. If there are any knots they should be coated with patent knotting and the board then painted.

HOW TO PREPARE, PAINT, AND "GET UP" A SIGN BOARD.

We may appropriately take this opportunity of describing the best methods of painting and "getting up" sign boards ready for lettering and gilding.

Smooth
surface
desirable.

A sign board requires to be as smoothly "got up" as any other description of painted work, and the clearer the polish or lustre, and the freer from nits or grit it is, the better the work afterwards put upon it will look. This is especially the case when the letters are gilt. The smoother the surface the brighter and more lustrous will be its burnish. We would, therefore, point out that although there will be some extra labour required to get up the work properly, its appearance, when finished, will amply repay the trouble.

Much might be written upon the best plan of making sign boards so as to withstand the variation of the weather. Now, although this may belong to the domain of the carpenter and joiner, it may not be out of place to add here one or two considerations which should govern the making of a sign. Signs necessarily are exposed to the weather, and they should therefore be made of dry, well-seasoned wood, to resist the action of the fluctuations of temperature, the sun, and the rain. If the sign is a wide one and has to be joined up with two or three boards, it becomes doubly important that the wood should be dry. Again, it should be *smoothly finished*: if it is roughly and badly finished in this respect it makes it much more difficult for the painter

to get up well. For our purpose we will suppose that the sign board is made in the best manner, and delivered to us with a smooth level surface. The first thing to do will be to kill the knots, should there be any in it. We may point out that there *never should be any* in a sign board, it being always a serious defect, for no covering in the way of patent knotting, or glue and red lead, &c., will prevent a resinous knot from showing on the surface if exposed to the sun's rays. And the only effectual cure in these cases is to cut the knot out of the wood and let in a piece of sound wood in its place. The board may now be primed. For this purpose we prefer to use any of the dark reds or browns, red oxide, purple, brown, &c., mixed with raw oil. The second and third coats should be brown also, but mixed with one-third turps to two-thirds of oil, having a little liquid dryers added to harden it. All the paint used should be carefully strained before being used, and well rubbed down between each coat. If this is not done we are apt to accumulate on the surface of the board a quantity of coarse particles of colour and skins of paint which are afterwards very difficult to get rid of, and in any case roughen the surface and cause endless trouble which may be easily avoided; whereas, if proper care is taken a smooth and equal surface will be obtained with the expenditure of one-half the time and trouble. We are now describing the best methods of getting up signs to be finished with a black ground, but, of course, the same conditions will apply in the getting up of any coloured grounds.

Knots to be
avoided in
making
signs.

Preparing
and
painting.

CHAPTER IV.

METHODS AND PROCESSES (continued).



HERE are three different ways of finishing a sign board black, all of which may be used on different work. The first is finished with the ordinary black paint, which may be either the common lamp-black, ground in, and mixed with boiled oil; or drop black, or vegetable black, mixed in the same way. This plan is, however, only suitable for use upon rough or common work, because a thoroughly good surface cannot be got in this way.

Common
work.

In the second method we first give the sign a bare coat of oil colour black upon the previous three coats of brown. We then grind drop black in turpentine (or fine vegetable black will do), stiffish, and add sufficient japanner's gold size or varnish to bind it, and with this carefully coat the sign over. When this is dry and hard we finish with one or two coats of copal varnish, or good "outside oak" will answer the purpose. If this is properly and carefully done a smooth and glossy surface will result.

Second
method.

Best work.

Our third method of finishing differs from the others only in the finishing coats. Instead of using the quick or dead black, as in the last place, we mix our black for the last coat but one so that it shall have an egg-shell gloss, which may be made by using about equal quantities of turpentine and oil, or perhaps a little more of the former than of the latter. We give the board a bare coat of this colour, and when it is dry we give it a finishing coat of black japan alone. This, if carefully done, will make a beautifully smooth and lustrous jet black surface, upon which gold leaf will come out very bright. Messrs. W. Harland & Son have been famed for over a century for the brilliancy of their black japan, which should answer this purpose admirably. This surface becomes very hard in a few days; should the sign from some cause require two coats of the black japan it should be carefully damped down with a damp washleather before giving the second coat, which damping prevents the second coat from cissing, that is, drawing itself up off the surface and forming small holes—technically called pinholes. All

A third
method.

Necessary
damping
between the
coats of
varnish

THE SIGN-WRITER AND GLASS EMBOSSEY.

varnishes will do this when one coat is put upon another except prevented by damping down.

We have thought it necessary to lay particular stress upon the careful getting-up of sign boards, for the sufficient reason that no good work is ever done without care and labour, and much otherwise good work is spoiled from want of attention to these matters; on the other hand, the pleasure and satisfaction experienced when we know we have done a good job is worth all the extra trouble and care we have bestowed upon its execution.

A SIGN-WRITER'S OUTFIT REQUIRED FOR WRITING.

The board being now finished painting and ready for writing, we shall require a two-foot measuring rule, a chalk line, fine soft string (or what is called piping cord will do), a rest or mahlstick, palette board and knife, a few sable and camel-hair pencils—the former being the best, as while the hairs are flexible they are yet stiff enough to hold heavy colours in writing without bending, as camel-hair does; but the latter will serve the purpose when not using heavy colours. These are what are called “writers”; and when purchasing them it is a good plan to wet them with the mouth and put the point upon the thumb nail and twirl or twist the pencils—if they keep their point they are good, but if the point opens or splits they are not good. We shall also want some short haired pencils for filling up the letters after they are outlined. Mr. J. Hill, of 230, Pentonville Road, King's Cross, N., specially lays himself out for making these fine goods for sign writers and grainers, and Messrs. T. Pavitt & Sons, of Southampton Row, have of late years introduced to the trade a substitute for sable which they denominate “Taurus” writers, and which possesses many of the qualities of the sable but at a much cheaper rate, and we could not do better than recommend attending buyers to send for their lists before making their purchases. Messrs. Brodie & Middleton, of Long Acre, have been for years honourably known for the excellence of their fine goods. Before the pencils are used in oil colour they should be dipped into turpentine.

Pencils should always be washed out with soap and water when done with for the day, as they keep better and wear longer thus cared for. Some writers grease them or put them into sweet oil, but no plan is so good as washing them. Some pipe chalk, or soft white crayon, will be required for sketching in letters before writing them.

The pipe chalk is the best for the purpose, and may be procured from any tobacco pipe makers, as it is simply unburnt pipe stems, and makes admirable sketching crayons.

The paint for practising with on the black board must be mixed of white lead, or zinc white and oil; but should have as much sweet oil mixed with it as will prevent its drying. We can by this means practise upon the same board time after time without having to repaint it, because when we have done practising for the time, the paint we have been using may be wiped clean off the board, leaving it clear for another start. The paint may be held in a tin tot or dipper, which is made with a flange that fits on to the palette board. By using these, we have our working colour always at hand without having to move for it.

GETTING TO WORK.

Everything being now ready, we divide the board horizontally into three-inch and two inch spaces alternately. We must then mark a series of straight lines and curves in the three-inch spaces, using the pipe chalk and indicating the lines by slight dots, the straight lines in one line and the curves in another. We now take the palette board in the left hand, having the thumb through the thumbhole, also holding the mahlstick in the same hand. We then dip the pencil into the paint, then on to the palette board, to take off the superfluous colour, then rest the end of the mahlstick upon the board, with the wrist laid lightly upon it, holding the pencil charged with colour between the two first fingers of the right hand, and proceed to form the strokes and curves. These lines and curves should be practised incessantly until they can be done correctly and rapidly. After this has been accomplished, all the rest will come easy.

CHAPTER V.

THE SETTING OUT OF THE SIGN.



E pointed out in our last chapter how best to commence to practise the art of sign-writing. This information was expressly written for the benefit of the young beginner, and starting from this point we will suppose that he can make the straight lines and curves he has been practising, fairly well. The next step will be the setting out, spacing, and

practising the formation of the letters themselves. These are of so many different kinds, or types, although, however, a family likeness runs through the whole, that we shall find it the best plan to practise and become acquainted with those letters upon which the greater part of the different types are founded.

THE ROMAN TYPE OF LETTER

The Roman capital letters are the original types upon which all our modern forms of letters are founded; even “Old English,” “Egyptian,” large and small, with or without serifs, and all the innumerable modifications and novelties for ornamental letters in common use, owe their origin to the Roman capital and small type; in fact, except this form is retained sufficiently to be readable in an ornamental letter, then the object desired will not be attained.

The Roman type of letter is the basis of all others.

B A D E

A B C D E F G H

Examples of Roman letters.

We therefore strongly recommend the student to practise the Roman capital and small type, until he has a thorough knowledge of their shape, and can form them with ease and correctness; when this is accomplished he will find no difficulty in forming any other type of letter. There is another reason why he should follow this course, and that is the fact that there is no type of letter as yet invented that approaches the Roman in grace of line and beauty of general form, and by practising these, the student will acquire a freedom of hand and a habit of forming his letters—whatever kind he may be writing—with the same freedom and beauty of curve and line as the Roman. This follows naturally, and as a matter of course, because the shape of the “Roman” being indelibly formed on his mind's eye he will impart even to an ordinary block or sans-serif letter some of its grace.

R R R R R

S S S S S

M M M M M

Examples showing constancy to form or type through varying periods.

How to test a pencil.

How to wash a pencil.

How to start practising.

How to start.

SETTING OUT AND PRACTISING.

Const. &
practice
necessary

Letters to be
uniform.

In setting out the letters for practice it will be best to go through the alphabet consecutively time after time, until a thorough knowledge is obtained of the form and proportion of each letter. This plan also facilitates the acquisition of the power to make these letters exactly alike when they occur in the same line. The repetition in practice of each letter is the only way to acquire the necessary skill and knowledge. No one can be considered a good sign writer who is not able to make two copies of the same letter exactly alike, or at all events so alike that the difference between the two could not be discovered except by accurate measurement. This is a very important point, and should be constantly kept in view by the student in his practice, for there are many names and words which contain two, three, or more repetitions of the same letter, and nothing looks so bad or so unworkmanlike as to see these of different shapes and proportions.

When a sufficient knowledge has been obtained of these letters we may then proceed to set out the letters in the form they might be used on a sign board. This is a very important part of the sign-writer's work, and one in which much experience is required, and also in which many blunders are made, for, except the matter put upon the sign is set out to the best advantage, with a due regard to the most important parts of it, we do not fulfil the purpose for which the sign is used.

PROMINENT LINES.

Spacing the
letters.

In all signs, of whatever nature, the name and business should be the most prominent feature, or the name and the name of the article to which we want to call the attention of the public. It is, therefore, of the greatest importance that due emphasis should be given to these points. Another point to be observed is the spacing of the letters, some letters requiring to be nearer together than others, for instance our own name—

SUTHERLAND.

Letters
requiring
close dots.

Arrangement
of the matter
important.

It will be perceived that as the space between the L and the A are the same as that between the H and the E, the space between these two letters looks very much greater than it really is, on account of the slope of the A and the absence of projection at the top of the L; consequently, in writing, we shorten the bottom arm of the L and put it almost close against the bottom of the A, and thus diminish the space between the two. Sometimes a flourish is put between the two as thus—LA. This is almost a necessity when using italics, or letters in a slanting position. The top part of the T should also be placed closer to the letters on each side of it, as in the UTH, by which means we lessen the space which necessarily exists in the shape of the letter. When the T and the A come together as here shown TA, then the A may be placed partially under the top arm of the T. As a matter of course, whenever the A is used it must, from its shape, leave a greater space than any other letter except the L. The sign-writer can arrange these letters himself, but in printing from type this cannot be done, as each letter occupies a certain space, which cannot be altered; but the inequalities in the spaces are not so perceptible in small type as they are in signs. From what we have said the student will be able to get over any difficulties of this kind as they occur.

In "setting out" a sign, our attention should be first directed to the quantity of words we have to put upon it, and decide as to the number of lines it will require, and what space we have, also the size of each line of letters and the kind of letters it will be best to use for each line, so as to cause them, by contrast of form, to be easier read and better understood.

STRIKING OUT THE LINES.

If possible
at an
earliest
date.

Having so decided, we next proceed to mark out the lines between which the letters must be confined. When space will allow it, a better appearance is given to the work if the first or top line is an ellipse, or segment of a circle. This may be formed as follows: first, find the exact centre of the

board, top and bottom, and strike a chalk line from point to point, then put in a tack, needle point, or a bradawl on the line at the bottom edge of the board, form a loop at the end of the chalk line, and put it on the bradawl. Now take a piece of pipeclay, wrap the line round this, holding it in the hand, and draw the point of the chalk along on each side of the centre line, and a segment of a circle will be formed. This will, of course, be rounder or flatter the nearer or more distant the centre point at the bottom of the board is from the line of the circle. It will often happen that the board is not wide enough to enable us to draw this segment of a circle flat enough for our purpose. In this case we must place the sign in such a position that we can fix the centre point below the outside edge, and thus get a longer radius. We next strike the horizontal or straight line for the tops and bottoms of the letters.

How to
strike it out.

These being all done we take a piece of pipe chalk and set out the circular line of letters first. It should be noted in painting any letters on a circle, that all the vertical lines radiate from one common centre, and consequently will be slightly broader at the top than at the bottom. In sketching, we place a dot on the line at the distance from the edge of the board at which we intend to commence the formation of the first letter; we then place another dot, very slight, at the opposite side of the space we think the first letter will occupy, then another dot to mark the distance or space between the first and second letter, and so we proceed with the whole of the letters, gauging with our eye the space each separate letter will occupy. We thus see how to place the number of letters on the line, and the requisite space between each. If our first dotting does not come near the mark, it will, at all events, give us a tolerably correct idea of the necessary alterations required to place each letter in its proper position, and by going over it again with the dots we shall see exactly where to place each letter before we begin to sketch them in, and thus avoid much useless labour.

Gauging the
spaces.

It is always a bad plan to commence to sketch in the letters without first resorting to the method above, except in the case of adepts, as the chances are almost a hundred to one that we find at finish we have to do the whole over again and perhaps a second time also, and not be satisfactory when done. An experienced sign-writer very rarely sketches in his letters just as he intends to finish them, but trusts very much to his pencil in writing. This facility of execution, however, comes only from long experience and constant practice. In the student's case it will be best for him to form his letters in the chalk first before using the pencil and colour; he thus insures a better arrangement and form, as any little inaccuracies in the form of the letter will be perceived and rectified in the writing, for we often see errors in our work when going over it again, which we were totally blind to when first sketching them. This is a general experience. Many eminent artists, when they have finished a picture or made a sketch design, will put it away and not look at it at all for a time, so that when they take to it again with the object of finishing it, they, coming to it with a fresh eye and mind, find many errors they could not see before; and so it will be best, from every point of view, for our sign-writer to first sketch his letters with the chalk, as when this is done to his satisfaction he may proceed to use the pencil and colour, and form the letters in outline with the point of the pencil. We say in outline advisedly, because there is no other way in which the student can acquire that freedom of hand, correctness of line, facility of execution, and knowledge of proportion so requisite to the practical sign-writer. By practising this method he will acquire that unhesitating confidence in his strokes which marks the accomplished craftsman. Not only this but he will acquire the faculty of making all his letters of the same thickness, unerringly, and without measuring them; but, of course, he could not have done this without having previously practised from measured spaces, and thus acquired that eye knowledge, if we may use the term, as distinguished from hand knowledge, which distinguishes him.

Bad plan.

Sketch the
letters in
chalk.

Paint the
letters in
outline.

Outlining
the best
training.

The student will find, when he has decided upon the thickness of the strokes of his letters, that great help may be had from using a piece of paper having the width of the thick and thin strokes marked upon it as a gauge; these marked on the board with a couple of dots, give us an

Strength of
the thick
and thin
strokes of
the letters.

equality of width without which no lettering can be satisfactory. The spaces between the letters may also be thus marked out, always bearing in mind what we have said in reference to the conjunction of certain letters, such as L and A. Having sketched the letters we outline them with the point of the pencil, and fill up between the lines with a short-haired brush, by which method there is a great saving in time and labour. And also, as we have before said, greater correctness, for if we use the side of the pencil, as many do, to mark the lines with, there is sure to be an unequal pressure, and the hair of the brush swells out, and the consequence is that we do not get a straight even line, but one that will not bear examination, being in and out, to use a homely expression—like a dog's leg—while by using only the point of the pencil, we get a straight even line.

Another plan is to set a joiner's compass with screw nut to the size occupied by the letter and intervening space, and then quickly run over the line to be filled, adjusting the compass until the right division is secured. Then the letters may again be marked off, showing their exact size and the space between. If each of these divisions is fixed on the top line of the sweep, a chalk line struck from those points to the centre of the circle will give the exact diminution of each letter towards the centre.

A good writer dispenses with these precautions, as his educated eye enables him to detect inaccuracies at once; but the first steps in the ladder of learning are always the most tedious and difficult of accomplishment; and we would commend to our readers the motto of the great artist of the Renaissance (Cellini)—"NOTHING IS DENIED TO WELL-DIRECTED DILIGENCE." This is a note of inspiration to the desponding toiler which he should ever keep before him.

CHAPTER VI

TOOLS AND MATERIALS.



HAVING, in our last chapter, upon the student to practise either letters or ornament by outlining them with the point of the pencil, and then filling them up between the lines, we return to the subject as being of the utmost importance to the successful use of the pencil and the correct execution of work done with it. It not only enables us to execute the work quickly and more correctly, but it educates the eye in the measurement of distances or widths, and it seems marvelous how, when

the eye, through practice, is thus taught, the hand is unerringly guided to make letter after letter, which shall not vary in width to any appreciable degree. On the other hand, if we depend upon and work with the side of the brush, as many do, we shall never arrive at any certainty in making our strokes, and letters thus produced will be found of all thicknesses.

EXCEPTIONS TO THIS RULE.

Of course, there are various kinds of painting to which this system of outlining with the point of the pencil does not apply. In the Potteries, and in all japanners' workshops, the girls and men who paint flowers, &c., upon earthenware, and upon tea trays, &c., &c., invariably use large sable or camel-hair brushes, these they fill with colour and so manipulate them that they will, at the same time, make a bud or a leaf at a single stroke, which, by the peculiar handling of the brush, will appear in light and shade, and with the point of the same brush they will make a line as fine as hair. These people, as a matter of course, are not tied down to any set form as the sign-writer is, and, in their

As seen
and potters'
practice.

case, accidental touches are sometimes more beautiful than intentional ones. But the sign-writer must confine himself strictly to the recognised form of the letters he is doing, and accidental touches, in his case, are defects; and that is why we give so much importance to the outlining. It is not only invaluable in sign-writing, but is indispensable as well in glass-painting of any description, and on decorative work generally.

WRITING AND GILDING LETTERS.

Having described how the lettering on sign boards should be set out and spaced, and having placed before the student the best methods of setting about and doing his work, we may say a few words as to the gilding of letters. We need hardly point out that letters on sign boards, or indeed on any painted grounds, are written with oil or varnish gold size.

GOLD SIZE.

There is a slow size and a quick size. The slow size is a compound of fat linseed oil and yellow ochre ground up together—in this state it may be purchased from most of the large varnish-manufacturing firms, and is then too thick for use. When about to use it, a portion (as much as may be required for our immediate purpose) is taken from the pot and mixed with a little boiled linseed oil, just so much of the latter as will thin the size to a working consistency, and strained through fine muslin; this is put into a convenient sized pot so as to be handy when working. As a rule, the size thus mixed may be laid on one day and gilded the next. But if it is required to gild in oil on the same day as the size is used, then a little quick-drying copal varnish may be substituted for the boiled oil; indeed, many writers prefer to use the varnish in all cases, but we are decidedly of opinion that no mixture of gilding size will last so long or answer the purpose so well as the genuine oil size, if the size is good and mixed with really good boiled oil it is the most lasting composition we are acquainted with. We have known it to stand firm on sign boards for twenty years, while all the paint on the board uncovered by this gold size has utterly perished.

Mixing the
gold size.

Slow size.

Oil size the
best.

OUTLINING AND FILLING IN.

In using this size to form letters for gilding, a sable pencil or a muck sable should always be used, as they have a spring and stiffness of hair which enables us to lay on the size without leaving fat edges; for it should always be borne in mind that oil gold size, whether quick or slow, should be laid on evenly and sparingly; if it is laid on too thick it will run over, and although it may appear dry yet when the gold is put on, it will be soft and not dry underneath, and bad work is sure to result. The best plan is to outline a letter, and as soon as it is done put on and spread the size with a hoghair fitch, which will be found much better than any other kind of brush for this purpose. If it is properly done, and the size equally spread over the surface, the gold will look smooth and uniform in colour, whereas if the size is laid more on one part than another the gold will look shady and dirty. The picture-frame gilder is very careful in the use of oil gold size, and will rub it quite bare, and, generally speaking, this is much more difficult to keep right upon unequal or ornamental surfaces than upon a plain surface.

Fat edges to
be avoided.

Outlining
the best.

THE RIGHT "TACK."

When the size is dry—not dry in the common acceptance of the term, in which case it would be hard, and the gold would not stick to it, but dry with a slight tack or stickiness, then it will be in the right condition for laying on the gold. The right state of the tack can only be judged correctly by one having experience; but for the guidance of the student we may say that the right tack is when the size is hard enough for the finger to be drawn along the surface without feeling any stickiness, but at the same time if the top of the finger is put upon it for a second when we feel a tackiness, it is fit for gilding. Of course these remarks apply to other things besides letters when using oil gold size.

The right
time to gild.

Time of
tack.

QUICK GOLD SIZE.

Quick gold size may be of two kinds—1st, quick-drying varnish with a little oil gold size mixed with it to hold the tack; by regulating the quantity of oil put with the varnish

Quick size
not so bright
as oil size.

THE SIGN-WRITER AND GLASS EMBOSSE

this size may be made to dry in from two to ten hours. 2nd, japanners' gold size, which will dry hard enough for gilding in half an hour; this latter is however, a very unsafe vehicle to use for gilding upon, for if it is laid on thicker in one part than another, the thin coat will dry before the thick parts, and so make the gilding unequal. The gold on this size, too, never looks equal when gilt to that on the oil size; in many cases the latter has almost a burnish, while at times the former is little better than bronze powder.

There are, of course, times and places where a quick size must be used. In these cases it will always make safer and better work if a little copal varnish is added to the japanners' gold size; it will cause it to hold its tack better, and the gold will be brighter in appearance than with the japanners' size alone.

METHODS TO PREVENT THE GOLD STICKING

We have in a previous chapter described how to get up a sign board for writing and gilding upon; but since, however, the surface to be gilt upon is prepared (except it is a flat or dead ground, there will be a slight tack or stickiness on the surface of the paint, and it requires so slight a tack for gold to stick, means must be always taken to neutralise that stickiness before laying on the gold size. This is done by the use of egg size, or by dusting the surface with powdered French chalk. In the first case, the white of the egg is blown into a cup or other earthenware vessel, by making a hole at either end of the egg and blowing out the white, leaving the yolk in the shell, water is then added, and a common sash tool is used for breaking up the white by putting it into the mixture and twisting it round between the palms of the hand until the whole is in a state of froth, this is then brushed on to the sign and worked with the brush until the entire surface is covered with the froth of the egg; if properly done this will almost to a certainty prevent the gold sticking anywhere but upon the gold size. After the gilding is done the egg size may be washed off with warm water and a soft sponge.

The other plan, and the one most generally in use, especially for outside work, is to dust the board over with whitening dust, or powdered pipe clay, but it must be an almost impalpable powder or it will make the gold size rough. Upon this the letters are set out and written. When the letters are gilt this powder may be removed by washing with water, and wiping with a damp chamois leather.

THE GILDING

There are three ways of laying the gold—first, with the tip and cushion; second, direct from the book; and third, with tissue paper specially prepared for outside work. When a sign can be gilded under cover, the tip and cushion is the best method to use, as the gold leaf can be laid upon the size without pressure, which adds very much to its brilliancy; of course it has to be pressed a little with the cotton wool when it has been laid on with the tip, but that may be done without injury; but when the gold is laid on from the tissue paper, or from the book, a certain amount of pressure has to be used, and this is apt to disturb the size and so make rough and uneven work.

TRANSFERRED GOLD

Outside gilding cannot be done with the tip and cushion, consequently we are compelled to lay the gold with the paper. For this purpose the gold-beaters prepare books, made of tissue paper, to which the gold adheres sufficiently to be moved about without danger of its being blown off the paper, and being thin and semi-transparent, we can see the gold through it, which fact enables us to use up every particle of the gold, and place it exactly where it may be required on the letters. This is a great improvement on the old method of rubbing the paper with bees' wax, and then taking up the gold; it is more cleanly, saves time, and prevents waste. We may here caution the student as to the manner in which he rubs the gold after it is laid on. If the size is at all soft, there is a great danger of rubbing the gold *into* instead of *on* the size, and thus making bad work. This caution is all the more necessary, inasmuch as, even if

the gold size is of sufficient hardness to allow of its being rubbed well with the cotton wool in order to level and smooth it, this should be done with the greatest care, and the pressure of the cotton wool must only be sufficient to answer the purpose. Beyond a certain point nothing but injury is done to the polish and brilliancy of the gilt surface, for it should always be borne in mind that the smoother the surface to be gilded and the brighter and more brilliant the gold will appear.



(CHAPTER VII.)

DECORATING ON GLASS



Gold upon glass with gold and silver leaf is a means of decoration which has obtained a very wide and extensive application, and although the art in practice hitherto has been confined to a great extent to sign-writing alone, we believe it will eventually have a much wider application for decorative purposes than it at present obtains. Sign writers seem to have a monopoly of the art, and we are rather inclined to think that this fact has something to do

with the neglect or indifference with which it is treated by purely decorative artists.

It is true that japanners make much use of glass gilding for inserting into various domestic utensils, for dressing and dining rooms, fancy boxes, photographic glasses for framing, and other useful and ornamental objects, but we think the work capable of being used for a much higher class of decoration, if properly and artistically handled; beautiful contrasts of dead or matt and burnished gold, of several tints or shades of colour, may be done with perfect immunity from danger of tarnishing, as the glass protects the gold or silver from the influences of the atmosphere, and, in fact, if the work is properly done, there is no limit to the time it will last. If the painted side of the glass is kept from direct injury by being scratched or clipped, we can see no reason to doubt its being as little liable to decay as any kind of painting which can be done; indeed, we may say it is less liable to decay, inasmuch as it is protected by the glass in front, and by the wood boards or glass at the back, thus rendering it impervious to the action of foul air or any other deleterious matter, and making it a permanent decoration which will remain for ages fresh and clean as on the day it was done. It may be cleaned without injury, and is suitable for any position. The polish of the glass will no doubt appear to some to be an objection to its use in some situations and for some purposes; but we think this difficulty may be in a great measure obviated by a judicious use of colour. Wall paintings have occasionally to be covered with glass to protect them from atmospheric influences—a notable example being the frescoes in the Lobbies of the Houses of Parliament. Now, we see no valid reason why works of a high class may not be painted in such a manner or by some method whereby they could be easily transferred to the glass after being painted.

It is a common practice to paint a figure subject or a landscape in oil, either upon silk, canvas, or paper, to cover it with varnish, and while the varnish is wet carefully fix it to the glass by pressing it flat down, excluding all air from between the two surfaces. If we were to paint directly on to the smooth glass with solid colours as on canvas, we should only produce raw, garish-looking work, simply because we cannot glaze or put on the finishing touches which are so important to the finished effect of an oil or water colour painting. But we see no real difficulty in transferring finished paintings to the glass in the manner directed.

Egg size.

How to apply it.

French chalk.

Tip and cushion.

Prepared books.

Avoid hard rubbing.

Its suitability for decorative purposes.

If we protect very permanent.

Easily cleaned.

Wall paintings protected with glass.

Painting on canvas and fixing to glass.

THE SIGN-WRITER AND GLASS EMBOSSEUR.

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THE CAPACITY OF GLASS FOR RECEIVING DECORATIVE DESIGN

Decorative ornament and decorative design afford a wide field for its application, but necessitate the most careful treatment, in order to avoid vulgarity. The glass lends such splendour to the gold and colours, that it is very difficult indeed to avoid garishness; but when the colouring is kept quiet, and in perfect harmony with the gold and silver, we obtain a richness of effect and a perfection of finish scarcely possible in painting on any other material. We cannot see any objection to this style of decoration being used for the panels of doors, &c., in combination with embossed ornament. The friezes of the entablature of our doors, wall panels, certain portions of oilings, panels of sideboards, wardrobes, bookcases, &c., all form suitable positions into which designs on glass might be introduced. Its brilliancy and permanent character should be a great recommendation. It is true there is an objection which some are ready to urge against this view of the matter, namely, the risk of breakage; but the same objection might be used against thousands of beautiful ornaments in glass and porcelain, and pictures, and everything it is possible to break through carelessness or ill usage, for it is quite certain that the force required to break a plate of glass a quarter of an inch thick, would most certainly knock a hole through canvas; but putting that aside, we might with equal force apply the argument to all articles of *vertu* which are made of glass or clay—Bohemian glass, Sevres china, Majolica ware, and mirrors, with all the thousand gems of Art we prize above rubies and fine gold.

TRADE AND OTHER USES TO WHICH GILDING ON GLASS MAY BE PUT

Chemists and druggists make great use of gilding on glass. The large show jars (specie jars) seen in their shop windows, having the Pharmaceutical Arms and various signs of the Zodiac, and numerous other nondescript designs and legends emblazoned upon them, are gilt, etched, and coloured in this style. All designs and inscriptions done upon the glass have to be done backwards way, that is, they have to be done on one side of the glass to be seen and read upon the other side. This is not so difficult as it seems at first sight in working upon flat surfaces; but in the case of the large specie jars spoken of above, the design and letters, in addition to being done backwards, have also to be done upside down. The design has to be worked through the opening at the top of the jar, which, of course, is very much smaller than the body of it—increasing the difficulties tenfold. Many of these designs comprise figures of men, animals, reptiles, birds, &c., and when we consider that these are shaded and etched, and coloured, with the figures and letters upside down, the arm being thrust through a hole at the top, and that the form of the glass is cylindrical, we must give the artist very great credit for the pursuit of Art under such difficulties. Many beautiful designs, being combinations of ornament and letters or inscriptions, are done on glass in this style for the decoration of the exterior and interior of shops, very large sums being expended by enterprising tradesmen for this purpose, for which it is admirably suited in every way—door and window plates of glass, instead of the ordinary engraved brass plates.

GLASS VERSUS BRASS FOR SIGNS

It is a mistaken notion that brass plates for business purposes are the cheapest and best in the end; this is not so. If we only take into consideration the difference in the time required to keep them clean, we shall find that the advantage is immeasurably in favour of the glass. In fact, we are convinced that the whole of the original cost of the work is ultimately saved in this item alone; and if we contrast the appearance of the two, and the variety of treatment the one is capable of, but which cannot by any possibility be applied to the other, we shall find that every consideration is in favour of the glass. This being the case, when this style of work is applied to business purposes, we think the fact a further argument in favour of gilding and ornamenting on glass being used to a much greater extent, and for a higher class of decorative work, than it has hitherto been.

When the gilding and silvering is done in combination with embossing, very beautiful effects may be produced; for instance, if we take an embossed plate, having the whole of the glass obscured except the ornament, and then gild or silver the ornament alone, a chaste and beautiful effect is produced; but this will require the embossing to be cut sharp and clear at the edges. The gold will not be so clear and bright as upon the plain glass; but if in addition to the ornament we leave a plain line of the untouched or clear glass, about one-eighth of an inch wide, round the embossing, we thus get a brilliantly-burnished line against the dull gold of the embossed parts, which has the effect of matt and burnish. This cannot be done when parts of the glass are burnished; but we can get the effect of the obscured glass by glazing in a square of ground glass against the gilded and embossed sheet, and with coloured grounds, without the ground glass.

GILDING ON GLASS A UNIQUE PROCESS.

Having mentioned some of the innumerable uses to which this work may be put, we now proceed to describe the best methods of working. Gilding on glass differs from all other kinds of gilding. In gilding by any other process, the medium or size for securing the gold leaf to the object to be gilt is invariably laid on first, and when the size has arrived at a certain state of dryness the leaf gold is applied; thus the surface of the gold is left clean and free from any foreign body; or the size is put on and left to dry, then wetted and gilt. But in the process of glass gilding, the size or medium is between the gold and the glass, and consequently can only be seen through that medium. It will be at once evident that the smaller the quantity of material between the gold and glass, and the more transparent it is, the more brilliant the gold will appear through the glass; therefore it is the object of the gilder on glass to so manipulate his size as to leave the least quantity possible between the gold and the glass.

VEHICLES AND MATERIALS USED IN GILDING ON GLASS

All kinds of semi-transparent gelatinous substances, and endless experiments have been made, and numberless methods been tried to accomplish this desirable object in the best manner, with, of course, varying success, but in every case the indispensable substance required has been the best isinglass. All the experiments and methods have had but one object in view, namely, to purify and make the isinglass more transparent.

Of these methods, it will suffice if we say that some persons recommend whisky, spirits of wine, &c., to be mixed with the isinglass. One receipt which is considered of great value is to add to the isinglass a certain quantity of the water in which a Spanish onion has been boiled, with a little nitric acid added. We have tried all these things, and have found that nothing surpasses the pure solution of isinglass properly and cleanly manipulated. We procure the best Russian isinglass—if it is good it will be colourless, and will completely dissolve in water without leaving any sediment, and will be clear as the water itself.

We have found that rain-water is better for our purpose than the ordinary tap-water, as it is free from contact with leaden pipes, and has less foreign matter in it. We take an enamelled pan perfectly clean and free from grease, into this we put a pint of pure rain-water, let it boil, and should there be any scum, skim it off with a clean spoon. We then add a few shreds of isinglass, let it dissolve, and again skim (if required) the water. The isinglass should then be poured into a clean earthenware vessel, and will have a slightly yellow tinge. This size must now be strained or filtered through the best white blotting paper, such as the chemists use for filtering purposes, and when it is cool it is ready for use.



CHAPTER VIII.

GILDING ON GLASS.

Gold for glass gilding



Gold for glass gilding

White books the best for glass gilding

How to test if the glass is clean

The position of the glass

The gold on the glass

It must be clearly understood that no success can result either in making the size for glass gilding, nor in the working, except the greatest care is taken that everything used in the process is perfectly clean and free from the slightest particle of dirt or trace of impurity. A camel hair tool either in the quill or in tin may be used for laying on the

size, care being employed that the same is clean and free from dirt. The gold leaf used for gilding on glass is the ordinary gold leaf of commerce, and should always be procured, put up in *white books*. Gold leaf, as a rule, is sold in books, about $3\frac{1}{2}$ inches square, containing 24 leaves of gold, which are generally $3\frac{1}{4}$ inches square. The paper of which these books are made is rubbed over with red ochre, rouge, or Armenian bole, in order to prevent the gold sticking to it, which it otherwise would do, and be thus wasted. Now, a portion of this powder naturally adheres to the gold leaf when taken from the book, and in ordinary surface gilding is brushed off while manipulating it, and the surface of the gold thus freed from the dust is left pure; but if this gold is used for gilding on glass, the powder on the leaf gets between the gold and the glass, and thus its brilliancy is impaired, and it will appear dull and streaky. This is a fruitful source of failure and disappointment. To obviate this it is always best to use the leaf put up in white books without powder, which may be procured from any gold beater. Great care should be taken to keep these books in a warm dry place, or else the gold is liable to stick to the paper and thus be wasted; in fact, this rule holds good with all kinds of gold or silver leaf, and should there be any suspicion of dampness having affected the gold books they should be put into a warm oven or other place to drive out the damp.

The glass to be gilt will require to be perfectly clean. This may be best ascertained by breathing upon it, and if the moisture from the breath flies clean off the glass without leaving any mark behind, we may conclude that it is clean. The design to be gilt must be put upon the opposite side of the glass to that we are about to gild, either by pouncing or by applying the paper with the letters to the glass; these act as a guide to lay on the gold.

The glass must now be placed upright, with a slight inclination backwards, the bottom edge should rest upon as small a surface as possible. Two small wooden pins fastened on a flat board, or an ordinary easel will do. If the bottom edge of the glass rests its whole length upon a table or shop bench, the size is apt to rise and run up the glass again, carrying dust or other impurities with it from the bench, on the other plan, if it rests upon two pegs, the size runs away clear. The gold leaf is laid upon the glass in the ordinary manner, with a gilder's tip and cushion. For glass the process of gilding is as follows:—

Place a number of leaves of gold on the cushion, having the knife, tip, and cushion ready for work. Now flow the size on to the glass, using it freely and not confining it to the exact part to be gilt. We now lay on the gold leaf in as large pieces as we can, using whole leaves when practicable, but, as it requires much practice to do this with success, half leaves are perhaps more convenient, we follow on until the whole of the space is covered. If the size gets dry or has run off before it can be all covered, it only requires to be again sized, which in almost all cases is necessary more or less. If we are gilding a line of letters or a breadth of border the glass should be placed so that these lines shall be perpendicular, because we can thus gild one line without the size flowing over or drying on another line, which is in all cases an advantage gained.

A point of great importance is to observe, when the size is put upon the glass, whether it flows evenly over the glass

or whether it runs into a number of rings, as though spots of grease were on the glass. When this happens, we may be sure that either the glass is not clean or the size is not pure, and if either is the case, it should be remedied at once, otherwise no good work can result. When the parts to be gilt are once covered, the glass must be put away until it is dry. When it is thoroughly dry we then rub or polish it with fine cotton wool, but this must be done gently with a light pressure until it is all pressed flat to the glass, which hardens it and causes it to allow of the size being put upon it without the gold being moved or washed off. The cotton wool for this purpose should be of the very best manufacture, without stiffening, dust, or other impurities. The most suitable may be purchased at the chemists' shops, but in buying it we only choose that which is soft and flossy to the feel; there is some that feels hard: this will scratch the gold instead of polishing it. This effect will also be produced if the wool has dust in it: consequently the greatest care should be exercised in keeping it pure and clean. As it is scarcely possible to make a solid job with one coat of gold, the size must again be flowed upon that previously put on, and another coating of gold leaf applied as before. Much of this work is done with single gilding and patching or faulting where necessary, but it has not the solidity or uniformity of surface of the double gilt work. When the second coat is dry it must be again polished with the cotton wool. This will cause the gold to have a bright burnish. We now take a brush and a vessel with hot water and flow it all over the glass, the plain parts as well as the gilt parts. This must be done repeatedly, letting it dry between each application, polishing also between each. By this action we remove all or the greater part of the size from between the gold and the glass, and any foreign substance as well. After this is done and again polished we give it another coat with the size; this only remains on the back of the gold, and serves to prevent the paint or varnish from penetrating the gold and so injuring the burnish. The gold is now ready for working upon.

THE USE OF HOT WATER

We must here give a caution as to the use of the hot water, as there is much danger of breaking the glass, especially in cold or frosty weather, and therefore the greatest care is required in its application. The operation should always be done in a warm room if possible, and in winter time it is the safest plan to flood the glass with lukewarm water first, and gradually increase the heat so that the expansion of the glass may be slowly produced, and thus the danger of breaking be avoided. This is also the reason why it is best to flow the hot water over the whole surface of the glass, for if it is put suddenly upon one part and not all over, the unequal expansion is pretty sure to result in a breakage.

After many years' experience we can confidently recommend the above described process as being the simplest and the best means of obtaining bright burnish gilding on glass.

WRITING UPON THE GLASS

The design or line of letters is now pounced or traced upon the gold, using either pipeclay in powder, charcoal, ultramarine blue, or Indian red to pounce with. The design must, of course, be placed face downwards, and the letters will be backwards way, so that they will read aright through the glass. In many cases it is useful, especially in straight lines of letters, to place a straight-edge upon the top and bottom lines, and take off a line of gold about one-eighth of an inch broad. This may be done with the end of a pencil stick or a square-ended piece of wood. We thus insure the tops and bottoms of the letters being perfectly straight and equal, and in doing large letters we may thus cut both the horizontal and perpendicular lines, and insure exactness by the use of the T square. In writing small letters the writing may be done leaving the top and bottom lines full, and then when the black Japan is dry we place the straight-edge as before, and with a sharp-edged jomier's chisel cut away all the superfluous colour and leave a sharp clean-cut edge; any inequalities on the edges of the letters may be rectified in the same way. A metal straight-edge is the best for this purpose, because the chisel or knife will not catch

Cotton wool should be pure.

"Faulting" the gold

Scalding the gilding

The danger of using hot water.

Precautions to take.

The writing reversed.

Top and bottom edges

Cleaning up.

in it as it does in wood. The chisel is most useful about a quarter of an inch wide, and is laid on the gold and pushed along, cutting the colour and gold perfectly sharp and clear. Long straight lines may thus be made equal in width and perfectly straight.

Various
med. c. 1888
for writing
on the gold

The material and varnishes used for writing upon the gold are various. Any quick-drying varnish will answer the purpose. In practice we have found that black Japan is the best. We have used Brunswick black, cabinet varnish, and others, and we have found that Brunswick black answers very well for all work which has to remain black, that is black and gold, but when coloured grounds are used it is inadmissible, simply because, although it dries hard and quick, yet it is always soluble in turpentine, and when a light coloured ground is put upon it, it smears and discolours it. Cabinet varnish is a capital medium for the purpose but none of them are equal to the black Japan, but even this is of so brittle a nature that when thoroughly dry and hard it is so liable to chip in scraping that it should be worked quickly, and not be allowed to get too hard before it is finished.

FIXING GOLD PAPER LETTERS TO BLINDS

The gilt paper is covered with some adhesive substance, like postage stamps, but stronger, the letters are cut out of the paper, wetted at the back, and stuck upon the zinc, the words being previously set out on the zinc in the usual manner. The gilt paper may then be varnished over with copal or any clear, hard-drying varnish which will enable them to be washed at any time. In varnishing the letters it is necessary to carry the varnish a little over the edge of the letters, thus preventing damp or wet from getting at the back of them.

PAINTING BLACKBOARDS FOR SCHOOLS.

There are two or three ways of preparing these boards. The object to be obtained is a surface on which the chalk will make a clear and distinct mark which will afterwards wash off and leave the board quite clear. If the board is a new one it will require to be painted with, at the least, four coats of oil colour, and finished with one or two coats of varnish colour; in mixing which only sufficient varnish (copal or best carnage) should be used as will bind the colour fast, without its being absorbent or fuzzy. The black should be ground with turps (drop black), then the varnish added, and should dry dead (or nearly so). This is an absolute necessity, as the chalk will not mark freely on gloss colour. Another plan, which is a very good one, is to paint the board with (if new) three coats of oil colour, then with two coats of varnish colour, thus having as much varnish added to it as will produce what is known as "egg shell gloss." This should be allowed to become thoroughly hard, and then be cut down lightly with felt and ground pumice. This is done simply to deaden the surface, and if, after being rubbed down, it is left again for the surface to harden, a capital surface will be produced for the work to be done.

CHAPTER IX

GILDING ON GLASS



The ground
work

Materials
used.

AFTER the whole is written, "backed," and squared up as described, the superfluous gold may be washed off with damp cotton wool, which takes up and retains the gold, and becomes as a matter of course very valuable cotton indeed, from which the gold may be extracted by burning in a crucible. Gold beaters are always willing to buy this cotton,

for in nine cases out of ten, however careful we may be in laying on the gold, there will be quite as much to wash off the glass as is left on, sometimes much more, so it behoves us to take care of these gold washings; this is especially the

case when the letters are small, as it is scarcely possible to gild to the exact form of the letters, and in fact it is not wise to do so except in very large letters, as it is more economical and the gold is brighter if we gild the line of letters solid.

Flat ornament, in gold or silver, is, of course, done in the same way as we have described for the letters: the ornament being pricked and pounced, or traced upon the gold.

MECHANICAL METHODS OF GILDING AND WORKING ON GLASS.

There is a system of forming letters and ornament in gold upon glass which has been used very extensively of late years by those who have been in the secret, called the brushing out system, and it is an admirable method of working, where a great number of small letters have to be put upon one sheet of glass, and have to be repeated on any number of plates; it is chiefly used for show-cards for shop windows, many of which may be seen secured to the plate glass of the window by a transparent cement. The work on them is very sharp and clearly defined, and for purposes of this kind the system is admirable,—not only so, but a vast number of letters may be done upon a small plate of glass at a cost that could not be approached if they were written with the pencil.

BRUSHING OUT

The method of working is as follows. The design, or letters, are set out upon paper of the exact size required, and this is then traced upon a sheet of thin brass, laminated lead, tin foil, or other substance of that kind, and the letters are cut out if the glass is gilt solid, to show as a gold ground with black letters, leaving ties where necessary. When ready this stencil plate is laid upon the glass, and the gold is brushed out and off the glass in the spaces or interstices left uncovered by the stencil plate; if we use a stiff stencil brush or a stiff tooth brush and gently rub it over the spaces, and damp it by breathing upon it occasionally, the gold may thus be cleared off from every uncovered space, leaving sharp clean out edges equal to anything done by the pencil; all the ties can be afterwards removed by using either a pen knife, chisel, or piece of hard wood; the back may now be painted with black Japan or Brunswick black, and the letter will appear black upon a gold ground.

If it is required to do the letter the opposite way, that is, a gold letter upon a black or coloured ground, then, instead of cutting out the letter from the stencil plate, we cut away the spaces between and inside the letters, leaving them secured to the broad spaces between the lines of letters by their tops and bottoms, except round letters, such as O and S, these are cut out all round and ties left to secure them; we now lay the stencil plate upon the lines of gold and brush out as before; when this is done we take a steel straight-edge and chisel and lay it exact upon the top of the letters and take or cut off the gold, and then the same with the bottoms, the letters will thus have perfectly straight tops and bottoms and have their proper shape; ties and any other portions of the letters that may require it, may be cleaned off with the chisel or knife. Of course, these two methods may be used upon one plate of glass, black letters on a gold ground and gold letters on a coloured ground. Coarsely etched ornament may also be done in this manner with admirable effect. Many of these glass show-plates are done so that they will show well and read as plainly by gas-light as in daylight; this is accomplished by leaving the letters unpainted, and the light shining through these uncovered spaces is distinctly seen and the letters read. Good effects are also got by using coloured varnishes to cover these plain spaces, which look black when looking at them in front, but when looked at from the inside the letters or other spaces will look like stained glass, and, of course, this will be the effect from the outside at night when the gas is burning inside the shop. This coloured varnish will also serve for the backing to the gold if it is solid, which it should be when double gilt. The success of this work will depend in a great measure upon the quality of the stencil plate, which must be sharp and clearly cut in order to produce thorough good work. It will be seen from the above description that there are many advantages in this

Great care
required in
clearing off

Black Japan,
Brunswick
black.

Black Japan
the best

Clearing up
after they
are written.

Getting the
design on
the glass.

Straighten-
ing up the
tops and
bottoms

Glass trans-
parencies.

Coloured
varnishes.

system over the pencil for a certain class of work; but it hardly pays to cut a stencil for one lettered plate, but when several copies are to be made of the same thing, there can be no question of its superiority.

GOLD GROUNDS.

Solid gold grounds are much used for window plates, fascias, and other purposes, and when the gold is uniform in solidity of surface, and of a bright clear burnish, the effect cannot be surpassed for brilliancy.

TWO METHODS.

There are two methods of painting on gold grounds, namely, by first painting the letters or ornament upon the glass and then gilding the ground; but there are numerous objections to this method, although it is much practised. In the first place, we are not able to make the edges of the letters or ornaments as sharp and clean cut as they ought to be, and, secondly, when we gild the ground we find that there is a kind of oily exudation from the paint which injures the burnish of the gold, and thus we have an imperfect work. We have invariably found that it is best in all cases to gild the ground first solid, and pounce or trace on the ornament or letters, then paint in the ground with the black Japan, leaving the ornament or letters uncovered. When this is dry and hard, we wash off the superfluous gold, and the letters are left with a sharp clean-cut edge or outline. We may now proceed to paint in the letters and ornament with black or any other colour required. The outline being secured, no after manipulation can interfere with it, which leaves us at much greater liberty to mix and blend the colours than we otherwise could do.

BLENDING THE COLOURS.

Much care and experience is required in the mixing, laying on, and manipulating the transparent shading and ground colours in this kind of glass painting. Varnish colours are a necessity, inasmuch as there being no suction or granular surface for the paint to hold to, oil colour does not harden properly and is liable to peel off or blister. Richly coloured grounds may be produced by first glazing or coating the glass with a transparent colour in varnish, or the coloured varnishes may be used for this purpose, care being exercised in the doing, that the varnish will flow evenly, and not more in one place than another, else the ground will be shady when finished. When the varnish or glaze is dry it may be painted over with solid colour of the same or any other tint as the varnish colour. Ultramarine blue, in oil or varnish, burnt sienna, the madder lakes, Victoria lake, and any other rich semi-transparent colours may be used as glazes to enrich ground colours. The ultramarine blue and sienna will require to be used with a sufficient quantity of varnish to keep them transparent, the blue especially having a tendency to dry of a lighter hue than it will appear when first mixed with the varnish.

DISTEMPER COLOURS USEFUL AND PERMANENT FOR GROUNDS.

The solid ground colour to paint on the back of the transparent varnish colour may be either used in oil, varnish, or distemper colour, in fact the latter may be used with advantage without the glazing colour; and our experience has proved to us that in all cases where the ground is not exposed to direct contact with wet, or even for outside work when it is properly protected, it will stand the variations of temperature better than either varnish or oil colour grounds. This arises from the fact that distemper will expand and contract, according to the state of the atmosphere, without either cracking or chipping, and this will go on for any length of time (that is to say, if the distemper is properly mixed); while varnish colour is but too apt to peel or crack—we are here alluding to solid body colours and not to transparent colours—when exposed to alternate heat and cold, dryness and damp, which causes it to lose its hold upon the glass. If distemper colours are used the best medium for mixing them in is milk (size or other glutinous mediums are not at all suitable, nor safe), and for all white or light-coloured grounds perfect purity of colour is secured by its use. Paris white, dry

white lead, emerald green, and all other tints of colour may thus be used; they should be very finely ground in water to the consistency of a stiff paste, then thinned to a working consistency with milk, which has sufficient binding power to fasten the colour to the glass. Common whiting is sometimes used, but is not so suitable as those above-named.

DISTEMPER GROUNDS.

In laying on distemper grounds on glass, it is necessary to flow on sufficient colour to form a solid body, as it is not possible to put on more than one coat; therefore, in ground ing, the glass should be laid flat, and the colour put on freely with a large camel-hair flat tool. In many cases the colour may be poured upon the glass, and the glass moved about until the colour has covered the whole of the surface to one uniform thickness; by this means we obtain a solid and even ground. On the other hand, in using varnish colours, it will frequently happen that the ground colour will require two or more coats before it is solid, but this will, of course, depend upon the nature and amount of body the colour possesses we are using. Colour with a solid opaque body, such as Indian red, and all the gradations of chocolate, maroon, and browns, which may be made with Indian red, black and blue, and burnt umber, and several of the dark bronze greens, will cover and be solid with one coat, but ultramarine blue, emerald green, lake colour, and all pulpy or semi-transparent colours will require two or more coats. Tints of colours, although mixed with white lead, will very rarely cover with one coat. A bad impression as to the durability of this kind of work is often produced by carelessness in mixing the grounds and inefficient protection afterwards. Often do we see examples when the colour and gold is partly peeled off the glass and the work has to be redone. As we have before said, gilding on glass will not stand except it be protected from the effects of the atmosphere; but this presents no difficulty, and only calls for the exercise of care in making the framework and fixing the glass in it, seeing that it is securely bedded in good white-lead putty, and the front edges are effectually stopped with the same material.

PAINTING ON SATIN.

Painting on satin or silk may be done either in oil or water colours. When painting in oil, the colours should be used very dry—that is, with but little oil in them. The tube colours are the best, but they should be squeezed out of the tube on to soft brown paper or blotting paper; this will extract and absorb the oil from them, and make them fit for using on the satin or silk, without danger of their spreading beyond the outline. The satin or silk should be pinned down to a drawing board, and have a sheet or two of paper between the silk and the board, then the design should be carefully transferred from the drawing on to the silk; this is done by rubbing on the back of the drawing with French chalk if the silk is dark coloured, but if it is of a light tint, then charcoal or Indian red, rubbed very bare upon the paper, may be used. Place the drawing upon the satin or silk, and go over the lines of the drawing with a fine steel point. When this is done, the drawing is removed and the outline will be distinctly seen on the satin. We may now proceed with the painting in oil-colours without any preparation being used, with turpentine as a medium, taking care to use the colour very sparingly. There is, of course, some difficulty in painting direct upon textile fabrics, but a little care and patience are all that is required to obtain success. It makes the painting easier to work if the outline is first filled in with a coating of isinglass size, having a little honey or glycerine added to prevent its darkening; we thus get a firm ground to work upon. It is always best to use the colours as dry as possible, and as little oily as they can be worked. To this end we place the oil-colours first on blotting paper, which extracts a great amount of the oil, and then when they are thus drained they are thinned with turpentine sufficiently to make them workable. In painting on silk or satin in water-colours, the outline is traced as before described; then is filled in with a coating of Chinese white, having a little glycerine added to it to prevent cracking; upon this the water-colours are painted, using Chinese white for all body

Gilding the ground first and lettering after.

Oil colour most useful and easy to use.

Milk the best medium to mix the colours with.

Ordinary size not suitable.

Flowing on the ground colour.

Varnish colour grounds.

Grounds varying density.

Faulty protection to be avoided.

colours, and afterwards glazing in the usual manner. The artists' colourmen supply a vehicle for using with these colours called water-colour meglip—this acts on water-colours as the ordinary meglip acts on oil-colours, and enables us to blend and graduate the colours with greater ease.

CHAPTER X

GILDING ON GLASS.

GROUND GLASS AS A BACKGROUND.



ROUND glass makes an admirable background for gold and colours, and does not obstruct the light; which fact is a great advantage in some situations, as it is often the case that we want an inscription on the glass without interfering with our light. Beautiful effects in illumination in the mediæval style may be got by putting the gold letters, such as capitals, &c., upon one sheet of plain glass, and writing the black and red letters upon another sheet of ground or obscured glass, the coloured letters on the rough side of the glass, and putting the two together. The colour of the ground glass being of a pearly white hue, receives a light soft shadow when the two glasses are put together; this is caused by the letters and ornaments on the plain glass, there being a slight distance between the two, owing to the unequal surface of the glasses, which prevents them coming in close contact with each other. By putting the two glasses together thus, we get a very effective contrast between the dead colour and the bright burnish of the gold, giving the latter a brilliancy not to be obtained by painting the colours on the plain glass, which gives them a glossiness that is objectionable, whilst its absence adds to the beauty of the work.

GLAZING THE TWO GLASSES.

In using two glasses for this kind of work the back one is a sure protection to the front, and helps to preserve it from injury. In doing this when the two glasses are put into a window frame, it is best to paint a margin of about three quarters of an inch all round both glasses, this serves to hide any putty that may get between them in glazing; this may, of course, be done in the ordinary way taking care that they are well bedded in and "back putted," which will prevent any damp air or moisture getting in, and thus preserve them. But if the glasses are to be put into an ordinary frame the edges of the two glasses when put together may be secured by covering them with strips of calico, saturated with patent knotting (shellac dissolved in wood naphtha). The glasses being placed as close together as they can be got, the strips are laid on the edges, and lapped over on each side, and when the knotting gets dry and hard, a thin coat of the shellac may be brushed over them, which will hermetically seal them from injury by damp, air, or water.

HOW TO PROTECT WRITING ON WINDOWS.

When this work is done upon large squares of plate glass (windows, for instance), and it is not practicable to cover them with another glass as above described, and there is no ground colour put upon the glass, we have found it to be the best plan when the gilding and letters are finished to give them one or two coats of the best copal varnish; taking the varnish about one-eighth of an inch outside the letters proper, on to the clear glass. This must be allowed to get thoroughly hard before being disturbed by cleaning, &c.; it will then protect the letters and ornaments for a long time, and is better than if they were not varnished.

RAISING AND SHADING LETTERS ON GLASS.

We may frequently see in the Metropolis and many of the large provincial towns, the fascia board of the shop windows having the names of the proprietors done upon slips of plate glass, and beautifully painted to imitate projecting wood letters, many of them being admirable examples of manipulative skill in the management of the graduating of light and shade; some of them are done upon gold grounds, others on white grounds, with gold letters and coloured blocks.

There are three methods by which this raising and shading may be done. It is, of course, a simple matter to paint these lights and shadows upon a sign board, that is, if the painter understands the principles of light and shade; but it is a very different matter to do it upon glass, simply because the painting of the lights and shadows are reversed. On a sign board if we make a mistake it can be remedied by painting over again, and, moreover, we can see exactly what we are doing, and the effect of every stroke. On glass, however, we have to put in the gradations of light and shade so as to produce their effect on the opposite side to that on which we are working, which, of course, increases the difficulty and the labour.

THE FIRST METHOD.

The first method of working after the gold letters are finished is to paint in the light and dark shades with solid colours, just as we would upon a sign board, looking to the other side to see that we are producing the effect intended. But before commencing to paint them in, we should place the drawing of the letters with the lines of the shaded blocks made out, upon the front side of the glass, as a guide. When the colours are laid in with the lights and shades in their proper places, we may blend them one into the other on all the curves or round letters by stippling with the ends of a small badger hair softener, or any other tool that will effect the purpose. Any portions of the colour which may have got beyond the correct line of the blocks may be scraped off when dry with a chisel or knife.

SECOND METHOD.

In the second method, we finish the letters and then paint in the black back shadows and a solid background, leaving the necessary space for the raised blocks to be painted in afterwards; when the ground is dry, we paint in the various shades and gradations of tint with transparent colours, using those in tases for this purpose, as they are purer and finer ground than the ordinary colours, and may be used in oil by adding a little sugar of lead to dry them, as many of them are but poor driers. Now, as the limits of the raised blocks are defined by the lines painted on the ground, we need not be particular as to going beyond the line. In painting these shades we graduate them with the badger, and blend them with the badger, and if we want a bright light upon any part of the letter, we wipe off the colour on that part, leaving the clear glass. When this first shading is dry, we again paint over the darkest shadows with the same colour as before: we thus increase the depth of the gradations of shade, and define the angles of the letters, as well as enrich the colours. When the whole of this is dry, we paint over the transparent lights and shadows with a solid body of white or a light tint of the same colour they have been shaded with; this must be a solid body colour, mixed with milk, and if properly done, will appear richer and softer than when done on the first plan.

A THIRD METHOD.

Our third method of working is by using the transparent shading without first painting in the ground colour; we work the lights and shadows as before described, not being very particular about going beyond the line of the block on those parts which require blending, such as rounds and curves. When the shading is done and dry, we use a solid body colour of a quick hard drying nature, and paint over the transparent colour up to the limits or shapes of the raised blocks, and when this is thoroughly dry, we may wipe or scrape off any of the transparent colour which may have gone beyond the line of the body colour. The last method is the one we have used in our own practice, and is the best, as better and cleaner work can be done by it. As a matter of course, it will be understood that practice and experience will be required in order to execute this work to the best advantage; but if the student will follow our instructions faithfully, he will soon be able to make good work in this style.

As we have before said, prior to attempting any important work, we would recommend the inexperienced workman to

THE SIGN-WRITER AND GLASS EMBOSSE.

Experiment
in a small
piece of glass

practise the raising and shading of single letters upon small pieces of glass; by doing so, he may soon acquire sufficient skill to justify him in undertaking more important work. With good examples of letters before him to copy, he only requires to obtain the necessary manipulative skill in execution, and our illustrations supply him with every variety of raised and shaded letters, best adapted for glass and sign writing.

ETCHING ON GLASS.

Cross
hatching

method

How to
proceed

point

Effect produced
by fine lines

Whalebone
makes a good
tool

Two and
three strokes
at a stroke

It will often be necessary to etch or shade figures of animals, ornaments, coats of arms, &c., in gold and silver leaf. This work will require that the student should have a knowledge of drawing and the principles of light and shade as reproduced by lines. This can only be acquired by a regular course of study, although most if not all the work done in this manner are copies of engravings of the subjects so represented, and many skilled workmen who could not originate them can make very fair copies. The effect to be gained is to make out and define by lines, straight, curved, and "cross hatching" the various features, detail and shading of the human figure, animals, ornaments, coats of arms, &c., in black upon a gold or silver ground, or the figures themselves may be gold, etched with black lines. This is sometimes done by painting in the lines with black, and gilding upon them afterwards, but we do not by this method get that softness of effect, or multiplicity of fine lines the work requires; we prefer, therefore, to work by removing the gold from the glass by scraping, or etching, the lines. When the gold or silver leaf has been put upon the glass as before described, we trace or pounce the design to be etched upon it with white or other coloured pounce; this should be done before the finishing size is put upon the back of the gold, but after it has been operated upon with the hot water as previously stated, the reason for this is that when the back of the gold is finished with size it becomes exceedingly hard, and in consequence much more difficult to cut or scrape out the lines than when it is left without the back sizing, but, of course, it must be sized after the etching is done. When the design is clearly traced upon the gold, we use an etching point, which may be either the edge of a penknife blade, a piece of hard wood, such as box, lancewood, baywood, or any other close-grained hard wood. With this we scrape off a good bold outline to define and mark out the various points of the design; when this is done we may put in the small detail of each part, then proceed with the shading where required. It is better in every respect to first mark the outlines distinctly, as we are then not so liable to make mistakes in the shading.

SHADING AND CROSS-HATCHING.

This shading is the most difficult part of the work, as the principal portion must be done by single lines in various subtle curves running parallel to each other in some parts, and in others by lines crossing each other called "cross hatching" in the manner of an engraving; this will require much practice before the student can do it effectively, but if he is copying an engraving he should carefully study the manner in which the lines run to produce these various effects, and he will thus obtain the necessary knowledge of them. Experience and practice will alone enable him to do it well, but when well done very beautiful effects may be obtained. We have often used strips of whalebone for scraping off the gold in shading, and found them of great service. We procure a piece of close-grained whalebone about a sixteenth of an inch thick, and from an eighth to a quarter of an inch wide, and cut it square at the end, and then cut notches or indentations out of it; with this homely tool we have done the shading quickly and with good effect. When the gold or silver is very hard to remove from the glass with the point, breathing upon it gently will make it easier to mark the lines. One, two, or three lines may be cut out at one stroke, by cutting notches in the square end of a piece of hard wood—the notches being of the width of the lines required—and then drawing it along upon the gold with sufficient pressure, and using a straight-edge to keep the tool straight. When the etching is done the gold should have a coat of the finishing size before being blacked, when this is dry the superfluous gold may be washed off the

glass, leaving it ready for the application of colour where required. Japan black gives black lines in gold on the front side. Vegetable black in varnish may also be used. If it is a coat of arms we have been doing, we put in the transparent shades suitable for the various colours that may afterwards be put on, as we see them in coloured armorial bearings, when these are dry, we may paint in the various colours solid.

CHAPTER XI.

GILDING AND ORNAMENTS ON GLASS

THE APPLICATION OF PRINTING PROCESSES



WE have hitherto spoken of this sort of gilding as applied to glass by the power alone, but it has also a wider application in connection with printing and transferring from engraved copper plates. Some years ago, a patent was taken out for a method of transferring designs to glass in this way, the

Transferring
designs to
glass

outline and shading of a design were strongly engraved on copper, the printing colour being made with linseed oil boiled to the consistency of a strong jelly when cold; finely ground or powdered ivory black being mixed with the oil to form the printing ink. The copper plate was then placed upon a stove plate, and the ink being laid upon it when it was hot became soft, and was easily pressed into the lines of the engraving with a boss or dabber made for the purpose. The superfluous ink was then taken off with a broad-bladed palette knife, leaving the lines filled with ink. A specially prepared paper was then brushed over with a thin wash of soap-lye, and while wet, laid upon the copper plate, and quickly covered with a printer's blanket, the whole being then subjected to the pressure of an ordinary screw printing press. The warmth of the copper quickly dries the paper, and it is carefully pulled off the plate, bringing the ink with it. The impression is then laid upon the glass to be ornamented, and rubbed with a rubber. When it has been on some time, the paper is washed off with a sponge and water, which leaves the print upon the glass. The glass is now put into a stove to harden the ink, when it is cleaned and ready for gilding and for colour.

It will be at once evident that the most elaborate designs, such as coats of arms, ornaments, &c., &c., may be thus executed without the aid of highly-skilled labour; that is to say, after the design is put upon the glass, ordinary labour may be used for gilding and colouring, under efficient superintendence, and thus the cost of such works may be reduced so as to insure a wide application and use.

Another method, in which printing from copper may be used on gold, when applied to other surfaces than glass, is as follows. We first gild the object to be ornamented (which may be a tea-tray, a box, a chair back, &c.) with leaf gold, using the isinglass as a medium, just as if it were for gilding on glass; but the size may be used a little stronger.

A second
application
of print.

The ink to be used must be mixed so that it will not get dry and hard, but in such a manner that turpentine or other like spirit will soften it (this may be done by adding a little of any non-drying oil or grease to the ink). The impression of the design is taken off the plate in the manner before described, and transferred on to the gold, the paper is washed off, leaving the ink on the gold. We now wash off the superfluous gold with cotton wool that is, all that is not covered by the ink. When this is done, we then wash off the ink with turps or other spirit, and the designs will appear in bright burnished gold, and in this state may be etched if desirable with fine lines; but as a rule this is not necessary, as all the lines may be engraved.

By gilding in this manner the gold will be much brighter and smoother than if oil size were used. It will, of course, be understood that the copper plates have to be engraved in a special manner for this work. They require to be cut deeper than for printing upon paper, in order that

Ink must be
well washed
off.

a sufficient quantity of colour may be conveyed to the glass or gold to prevent the water moving it, and also to avoid bare places (for except the gold be well covered, it will break up in washing), and for the broad parts of leaves and ornaments, a particular kind of cross-hatching is required to print a solid colour with. The mixing of the colour or ink will require some experience; solidity, tenacity, and solubility being indispensable. Many attempts have been made to accomplish this object by lithographic processes, but it is found that the stones will not carry a sufficient body of colour on to the glass or gold to secure it so that it will bear washing with water, and therefore the lines are ragged, and the broad parts pin-hole.

We have used this method of producing burnished gold on the outside of glass vases on varnished and other smooth surfaces, the process being very useful for many purposes, and the gold has a brightness which no oil gilding can equal.

In this case, if the object to be ornamented in gold is a varnished surface, we get up the work as smooth as possible, and use a varnish free from nits or undissolved gum. Upon this we lay the gold, using isinglass size exactly as in gilding glass, polishing it with the cotton wool, and give it a coat of the finishing size. We then pounce or trace the design on to the gold in the usual manner, and paint in the ornament with Brunswick black, or Canada balsam; and when this is dry we wash off the gold which is left uncovered by the design; then wash off the Brunswick black with turps; the design will then appear in bright burnished gold. It should be understood that the smoother the surface of the work and the brighter will be the burnish of the gold. The article thus decorated will only require to be varnished over again to secure the gold permanently.

Very beautiful work may be done upon glass vases, bottles, &c., by this plan; and when the gold is varnished it is surprising the amount of wear and tear it will stand. The best copal varnish should be used for covering the gold, as it has more tenacity, and does not become so brittle as the quick-drying varnishes do, consequently it is not so liable to chip. This plan has another advantage over oil gilding, inasmuch as there is no perceptible projection above the surrounding surface.



FIGURE XII.
EMBOSSED AND FIGURED
GLASS

As a means of decoration, embossing on glass has been practised for a great number of years; but it has only been within the last thirty or forty years that its usefulness as a decorative agent has been fully developed and recognised. The quiet and unobtrusive contrast between the dead or ground glass and the transparent or semi-transparent ornament which has, apparently, a slight relief, caused by the actual

difference of the two surfaces—enables us to use this kind of decoration with all the styles of architecture—Gothic, Italian, Greek, and in all and every situation where ornamental glass is used, vestibule doors, staircase windows, entrance doors to banks and public institutions, &c. Letters and inscriptions may be thus written in combination with ornament to direct or instruct. This kind of work is also extensively used as a permanent blind to the lower parts of office windows in commercial or municipal buildings, and for screens. Beautiful effects may also be produced by gilding and silvering, in combination with embossing, and by the introduction of coloured foils, and imitation gems of coloured glass cut with numerous facets, these being secured behind and placed in portions of the

gilded ornament specially designed for them. Some of the large firms of Birmingham have manufactured some beautiful works in this style. We remember seeing some of these at the Great International Exhibitions of 1851 and 1862, which were perfect gems of art.

USES TO WHICH IT MAY BE PUT.

Opaque panels for the doors of wardrobes, and panels for the saloons of steam vessels, bookcases, &c., may be beautifully decorated by being embossed, and then gilt and coloured. The embossed ornament may be gilt, and the plain part ground or obscured in the manner hereinafter mentioned. This style has a very chaste and quiet effect, and the obscuring the surface makes a beautiful background in contrast with gold or silver leaf. Fager plates for doors are very nice done in this style. Many years ago, when plate glass was limited in size to small plates, and the old fashioned chimney or pier glasses, having broad bevelled edges to them, were in vogue, embossed and cut ornament was much used on them as borders and corners, generally done in the Italian style, many of them very beautiful in design, some of them being afterwards silvered and gilt. Examples of these may still be seen in many of our old country mansions, and are eagerly sought after at the present time, the old taste for such productions having, in the usual course of fashion, been revived, and people are content to pay double or treble their original cost for them. Many useful lessons may be derived from the careful study of these old works.

THE UNIVERSAL EMPLOYMENT OF EMBOSSED GLASS.

The use of embossed glass in the present day is very extensive. There is scarcely a warehouse, a bank, a shipping office, or public building throughout our great towns and cities in which embossed or ornamental glass in some shape or other is not used; and there is no style of glass ornamentation so well adapted for the purpose, inasmuch as we thus get ornamental, emblematical, and inscriptive designs upon our windows without interfering with the passage of the light, which is, of course, a primary consideration in the use of glass, and to which all else should be subordinate.

There are, of course, many other uses to which embossed glass is put besides those before-named, such as public-house window signs, glass fascias for shop fronts, &c. These, as a rule, are executed by the sign writer; but the largest part of this work is done by the regular glass stainer or painter, and the writers and gilders on glass.

MISPLACED ORNAMENT.

Ornament for embossing will require, in the first place, to be designed in strict accordance with the style of the architecture of the building of which it forms a part. How often do we see this condition utterly disregarded—Gothic designs put into Italian or Greek woodwork, and *vice versa*. This does not always arise from want of skill in design or execution; but as the major part of this work is done by designers and workmen regularly employed in the various stained-glass works, and who are most of their time engaged upon the stock canopy work for fitting into almost every stained window manufactured, they, as a natural consequence, acquire a certain amount of Gothicism if we may use the term—which they stamp upon every kind of ornament they do; and if they attempt to design an ornament in any other style, cannot help but impart a Gothic character to it. And it is a singular fact that men who, as it were, continually run in one groove, are seldom able to break away from the fetters they thus insensibly weave around themselves; and so we get those numerous incongruous examples of ornament of which so many may be seen, not only in embossed glass, but also in the other departments of ornamental art. Again, these mistakes in style and in the adaptation of design to the purpose to which it is applied, will and do arise from ignorance, narrowness of idea, and inexperience.

APPROPRIATE ORNAMENT.

Ornament intended to be embossed upon glass should be designed expressly for that purpose, having always in con-

Experience
is
not
sufficient
to
be
in

For the surface

Very durable

It is
varnish

Decorative
effects to be
obtained by
this method

A kind of
area may be

Combination
of decorative
effects.

Ground or
ornament
may be
embossed.

Law
for business
purposes.

Signs.

Suitable
ornaments
desirable.

Correct
use of
ornament
used

Passage of
light thro
the glass to be
kept in view.

sideration the peculiarities and capabilities of the material upon which the ornament has to be formed, having regard also to the facilities of working. It should never be forgotten that the light has to pass through the ornament, and that the passage of light is the primary condition of the positions and circumstances of the glass; it is so placed for the transmission of light, and, therefore, anything that interferes with that condition is a defect and a mistake. The eye should be able to rest upon the ornamented glass without feeling oppressed or confused, and except this be the case no ornament can be appropriate or considered good.

SMALL ORNAMENT NOT SUITABLE.

Breadth of
design to be
suited to

Small and intricate ornaments, cut up with fine lines, have a disturbing effect upon the eye, besides being unsuited to the material. It is true that finely etched ornaments may be correctly executed by this method; but when used for architectural decorations the design should be treated with breadth and freedom. The simpler the ornament the better suited it will be for the purpose. Conventional leaves and flowers, with interlaced lines or strap ornaments, are well adapted for embossing, and it should always be borne in mind that flat ornament is best suited to the material from every point of view—best adapted for execution, most suitable for the transmission of light, and looks best when done. Cross hatching is used for shading, and when well and correctly done, is very effective, and is the best way of shading when shading is absolutely necessary to bring out the detail of the ornament, as in coats of arms, in the shading of heraldic figures of men and animals, in which colours are indicated by lines, but cross hatching will require experience and knowledge to do it perfectly, while simple lines will be found to answer every purpose, except in the special cases we have mentioned.

MATERIALS REQUIRED.

The acid.

The manipulative process of embossing glass is carried out as follows: Hydrofluoric acid has the peculiar property of dissolving and separating the component parts of ordinary glass, and this acid is the active agent used in embossing. It is needless here, and would serve no purpose, to discuss the method of manufacturing this acid, simply because it is a common article of commerce, manufactured by practical chemists, and may be had from almost every oil and colour man, or chemist and druggist, and therefore the student need not occupy his time in endeavouring to make what he can purchase at a tenth of the cost he would incur in making it himself. By-the-way, we would remark that a great part of what would otherwise be really practical works on these subjects are occupied with useless descriptions of the methods of making articles which can be bought much cheaper, and a great deal better, than any amateur could possibly make them, thus leading the student to waste valuable time which might be much better employed. All branches of decorative arts were at one time a much more laborious and difficult study than they are now; one reason being that the secrets of the manufacturing of various chemical substances and mixtures used in the arts were the property of the masters of this or that particular trade or profession, and these secrets were handed down from master to pupil, and from father to son, as most valuable possessions, to be guarded and preserved with jealous care and secrecy. This state of things is now happily changed; it is true there are still manufacturing trade secrets which are guarded with as much care as in the olden times, notably in the manufacture of varnishes, where each manufacturer has some special method or mixture he keeps exclusively to himself. But of late years so much study and scientific knowledge has been brought to bear, and so many master-minds have devoted their whole time and energies to the invention and discovery of the secrets of chemical science, that we may almost consider that the days of trade secrets have passed away. Manufacturing chemists now supply all the necessary pigments, whether artificial or natural, and those of the best; colours, varnishes, and everything required in the painting and decorating trades are produced in quantities, and of a quality and price with which no amateur can compete.

No need for
decorators
to make their
own material.

FAILURE FROM WANT OF CARE IN WORKING.

It is not an uncommon experience for tyros in glass gilding to find all their efforts marred and spoiled altogether, owing to some oversight or neglect of some simple precaution. For instance, a correspondent wrote us some time ago describing a failure, which was the result of using best glue size to back his gold, and gold size. We do not advise glue size for this purpose. When once the gold is put upon the glass, in a proper manner, and turns out well, having a bright clear burnish, there can be only two causes that will produce the mottling of the surface, the first cause being a want of size on the back of the gold, to prevent the varnish (of whatever nature it may be) from penetrating and tarnishing it, or using a greasy size, such as glue, which is totally unfit for the purpose; the second cause is the using a medium to back the letters with that destroys the singlass size, and this penetrates the gold. Glass gilding is a simple matter if properly carried out. It is also a very simple matter to spoil it utterly by carelessness and want of attention to instructions.

CHAPTER XIII.

ETCHING OR EMBOSSEING ON GLASS.

ACIDS.



GLASS-ETCHING, or embossing, are synonymous terms so far as the materials are concerned, but differ somewhat in the *modus operandi* of their use in practice. Etching on glass by means of acids is a very old process; but embossing on glass, as we now understand the word, is a comparatively modern process. The process

Etching an
old process.

of etching on glass is identical in its methods with the usual methods of etching upon copper and other materials, practised by many of the great painters of old, such as Rembrandt, Raphael, Claude Lorraine, Callot, Albert Durer; and in our day by Turner, Samuel Palmer, and numerous others, who have left behind them many valuable examples of this art. And in the present day a great revival of the process obtains amongst painters and engravers. In etching upon glass, any shape or form of vessel can be ornamented with the most elaborate designs by means of lines and dots, just as in an engraving, even to producing gradations of shade, and depth and strength of line, the only difference being in the nature of the acid used. Hydrofluoric acid is the only acid that we know of that will dissolve or disintegrate glass. A little nitric acid added to the fluoric acid will cause it to bite or dissolve the glass in a less fierce and more regular form than if the fluoric acid is used alone. It is a colourless liquid, having a pungent scent, and is very destructive to the skin whenever it touches it; and the fumes arising from it are most injurious to the tissues of the mouth, throat, and lungs, and mucous membrane of the stomach; therefore it is incumbent upon the workman to avoid inhaling the fumes of the acid when using it. This may be best done by using it only in an open shed or in a room having a good strong draught passing through it, or when there is much embossing the "aciding" should be done immediately under a square wooden chimney or air shaft, communicating with the outside atmosphere, up which the fumes would be drawn.

Used by all
the great
painters

Hydro
fluoric acid
and nitric
acid

Avoid getting
the fumes on
the lungs

With care, no injurious effects need result from use of the acid, but without due precaution permanent and dangerous effects are produced. Hydrofluoric acid is a combination of crystallised fluor spar and sulphuric acid, and may be purchased from the manufacturing chemists or some dry-salters. There are two methods of using it—one by means of the vapour produced by placing fluor spar in a shallow vessel and pouring the sulphuric acid upon it until the spar is covered. The action of the acid upon the spar produces hydrofluoric acid in the form of vapour, this condenses and forms the liquid hydro-fluoric acid, which may be used either in its liquid or vaporous form. For some purposes the latter may possibly bite more evenly, but for all the purposes of etching and embossing glass the liquid form will answer every purpose.

Methods of
using the
acid

THE SIGN-WRITER AND GLASS EMBOSSEY.

17

GROUND OR STOPPING-OUT MIXTURES.

The impor-
tance of the
being pro-
perly mixed

Base com-
pau from of
a good
ground

Also
in the
ground

Recipe for
making
grounds

A bees wax

Pricked,
pounded, or

The work
remains
perfect, pin

Etching on glass is done by first coating the glass with a mixture (technically called the ground) which will effectually resist the action of the acid—this mixture, as will be evident, being a most important part of the process, for if it is not properly mixed it will break up under the action of the acid, and will corrode the glass all over, and thus destroy the design and spoil the glass. These remarks will equally apply, of course, to the process of embossing. There are several mixtures and mediums used for stopping out—i.e., stopping or preventing the action of the acid—which will answer the purpose. The essential qualities of a good ground or stopping-out mixture are—First, a complete and perfect resistance to the action of the acid. Second, a perfectly smooth or homogeneous mixture free from grit, dust, or other foreign substance. This latter quality is of the utmost importance to the success of the work, for if there be any specks of dirt or grit mixed with it the acid will attack and destroy them quickly, and will make holes in their place and thus spoil the work. Third, a good stopping-out mixture should be firm but not brittle, and sufficiently soft to allow of being scraped or cut off with a chisel, etching point, or other metallic tool; for although in embossing proper we generally lay on the stopping-out mixture with pencils, yet there are occasions when it will be found advantageous to supplement the pencil with the etching point, chisel, and straight-edge, so that in both cases it is best to have the medium plastic, in order that we can add to or improve at pleasure.

A good stopping-out mixture is made with white wax (30 grains), gum mastic (15 grains), asphaltum or amber (15 grains). This is the mixture the celebrated painter, Rembrandt, used for etching on copper. Another mixture is given as that which Callot, the celebrated etcher, used, viz., white wax, 60 grains; amber or asphaltum, 60 grains; and gum mastic, from 30 to 60 grains, according to the heat of the weather. The hotter the weather the more gum was required. But a very simple and useful mixture for both etching and embossing is made with Brunswick black and white wax, in the proportion of 1oz. of the wax to 4oz. of Brunswick black.

Another very excellent mixture is made with bees' wax dissolved in turpentine, and strained through fine silk; it must be perfectly clean and free from grit. To this must be added about a sixth part of black Japan or Japan varnish, the quantity of the latter being varied according to the heat or cold of the weather—more Japan if it is hot, less if it is cold weather. Many embossers use Brunswick black alone for stopping out, but our experience is that it does not give the certainty in its resistance to the acid as when wax is mixed with it. Canada balsam is also used.

The process of etching or engraving upon glass by means of acid, although not of the same importance to the sign-writer as the embossing, is, as we have before said, often required in his work, and we shall, therefore, give the description of the latter first.

TRANSFERING THE DESIGN

We will suppose that the stopping-out mixture is properly prepared and ready for working. We shall require a design which may be made upon cartridge paper with the lead pencil, exactly as it is to appear on the glass. This design may be either pricked and pounced on to the glass as a guide, or a sheet of tracing paper may be put upon it and the lines traced with a sable pencil and ink, or with quick colour having an opaque body. The advantage of this tracing the design is that as the work has to be done backwards way, we can put the inked tracing underneath the glass with the back side of it against the glass, and thus have a clear guide, and every line in its right position, without the possibility of a mistake. It is this plan which is universally adopted by glass painters and stainers. The glass being placed flat on a bench or table with the tracing placed as above, we proceed to paint in the ground if we wish the design to be eaten away or corroded. Then we cover all the glass, with the exception of the ornament or letters, putting in the detail or shading with fine lines; but sometimes the process is reversed, and the ornament or letters

left smooth, and the groundwork eaten away. In either case great care should be exercised in pencilling in the outlines sharp and clear, with a firm stroke, using the stopping out colour freely, so that it will form a solid body of resisting surface to the action of the acid. Great care should also be taken to avoid dust lodging on the work while in progress, as every speck of dust or dirt mixed with the colour forms a weak spot for the acid to work upon.

WORKING THE DESIGN.

When the whole of the design is pencilled in, the work should be allowed to stand for twenty-four hours before being subjected to the acid. Any irregularities or errors in the pencillings may be corrected by using the chisel or point, and scraping or cutting, and the work should be carefully examined for any uncovered places, it being a very difficult operation to cover every portion of the ground without leaving minute portions uncovered, so much so that the etcher on copper, after he has coated the plate with the ground, holds it over the flame of a lamp or candle to heat it, and cause it to flow evenly, and this fills up the minute pinholes left by the brush. Of course, this is done to black it also, so that the etcher can see better what he is doing. We cannot do this with glass, as the heat would break it, so we have to exercise all the more care in painting the ground. The work being now ready for the acid, we place the glass on a level bench or table, and adjust it, so that it is perfectly level. This is a point of great importance, it being the peculiar property of this acid that if it lies on the glass unevenly—that is, more in one place than another—it will bite unevenly, those parts having the greatest quantity of acid upon them being eaten away quicker than the shallower parts, consequently causing an inequality in the depth of the embossing, which is avoided by a little trouble in the first instance. When the glass is properly adjusted, we shall require to put a border of walling wax round the edge of the glass to prevent the acid running off when poured upon it. This wall, as it is technically termed, must be about three-quarters of an inch in height, and placed carefully so that there are no loopholes for the acid to escape. Bees' wax and Burgundy pitch melted together make a good wax for the purpose. Russian tallow is also much used, but is not so good as the first. Common tallow or any stiff greasy substance that will resist the acid may be used.

THE ACID.

The acid varies much in strength, as sold by different makers, and does so when procured at different times from the same makers, and costs somewhere about 1s 6d. per lb. retail from the ordinary chemists and druggists, but much cheaper when purchased in quantities from the wholesale dealers or manufacturers. It is very rarely if ever used in its full strength as sold, and will require to be diluted with water. We can give no rule of the strength to be used, not only because the acid itself varies in strength when it comes from the chemist's, but the glass also varies so much in hardness that one piece of glass will take twice or thrice the time to emboss that another plate will take. We cannot account for this difference in the glass, except it is caused by the annealing process. Even in cutting glass with the diamond, the difference in hardness will be readily and continually felt or experienced by the glass cutter; so that it is only by practical experience and careful observation in the art of manipulating the acid that the workman can be sure of it being the right strength. It is always a good and safe plan to try the resisting power of the stopping-out mixture and the proper strength of the acid upon a waste piece of glass before using it upon any important work; this involves but little trouble, and effectually avoids any mishaps or bad work. Before pouring on the acid the work should be examined to see that there is no dust or other foreign matter upon it; if so, it should be removed by dusting with a feather brush, or blown off with a fan or bellows; having made sure of the acid being of the right strength we now pour it on to the glass to the depth of about quarter of an inch more or less, and let it stand until it has done its work. The time it will require to be left on the glass should be known by the previous trial on the waste glass, but it is

* Messrs. Wilkinson & Co., of Aston-cum, Sheffield, make an acid which may be absolutely depended upon.

always necessary to examine it here and there to see if it is doing its work properly, or if the stopping ground stands firm or is breaking up; in the latter case the acid should be immediately poured off and the glass washed with clean water, and the bad places made good by coating them over with the stopping; a large wing feather is the best thing to use to brush away the acid in examining the work. Should the biting be going on all right we let it remain the proper time, and then make an opening in the walling wax at one corner of the glass in the form of a spout; through this the acid will run off into a bottle, having a funnel in its mouth to receive it; by tilting the glass the whole of the acid may thus be saved for future operations. The acid must now be well washed off the glass with water; a small portion of the stopping should be then removed to see if the biting is deep enough; if not, then the acid must be put on again; but if it is as required then the walling wax must be taken off and put away for further use,* and the stopping washed off the glass with turpentine or any common spirit, and then well washed with common soda, hot water and soap, to remove all traces of the stopping. Caustic soda will clear off and effectually remove the stopping.

OBSCURING THE GROUND.

In order to bring out the design, the plain part or body of the work should be ground or obscured by grinding with fine emery powder, or fine white sand. The method of performing this operation is very simple, but requires care and much patience. The glass to be ground must be laid upon a perfectly level bed, which may be formed by using a bed of sand on a level bench, the sand being covered with wrapping to prevent scratching. The glass is sometimes fixed into a bed of plaster of Paris which effectually secures it from moving, and makes a capital bed for the purpose. A thick block of plate glass made by cementing two or three pieces together, or a block of copper and sometimes a block of *lignum-vita* is used. The emery powder is placed on the glass and wetted, and the grinding block is moved over it with a circular rubbing motion until the glass is ground and appears white; the embossed parts being sunk beneath the surface cannot be touched by the block, and appear clean and bright in contrast with the ground parts.

clear or free from specks, and its transparency is also injured to some extent by the flattening process it has to undergo in the annealing. The metal is taken up on the end of the blowpipe, as before described, but in larger quantities. The workman stands upon a stage exactly similar to a sawpit, with planks running from the mouth of the kiln holding the molten glass, having a space between the planks from two to three feet wide, and seven to nine feet deep. The glass-blower stands upon one of these planks, holding the blowpipe; he blows down it and swings it and the metal at the same time. By alternate blowing and swinging the metal begins to stretch out in an elongated cylinder. He also swings it round, and the centrifugal force thus exerted causes the glass to stretch, while the blowing forces it into a cylindrical form. Some of these cylinders are five feet long, with a diameter of twelve to fourteen inches, and in some cases of sixteen inches, and require men of great strength, with powerful lungs, to do the work. Glass shades are thus made, but of a better description of glass. While the glass is in a malleable state, the cylinder thus blown is passed between two upright pieces of wood fixed at the required distance from each other; this flattens two sides of the cylinder, and thus gives them the peculiar oval form most glass shades have; many, of course, are made without being pressed. The bottoms of these shades, and the cylinders for sheet glass, are cut level by means of a glazier's diamond fixed upon wheels; the cylinders are then cut down one side from top to bottom, and placed in an annealing kiln, and when they have acquired sufficient heat they are flattened by being rubbed with a thick clump of wood fastened to the end of a pole, and it is this flattening which causes the bloom that is seen on much of the common sheet glass,—the heat of the glass burns the wood, which leaves a film on the glass. Now, this flashed or coloured glass may be embossed by eating away the coating of coloured glass until we reach the white glass underneath; the effect thus produced being either white letters or ornament on a coloured ground, or coloured letters, &c., on a white ground, in the latter case the ground is eaten away, leaving letters and ornaments untouched; in the former case the ground is protected, and the letters, &c., alone eaten away. Very ornamental, although strong effects are thus produced.

CHAPTER XIV. FLASHED GLASS

EMBOSSEING FLASHED GLASS

VERY large quantities of flashed glass is used for embossing. This flashed

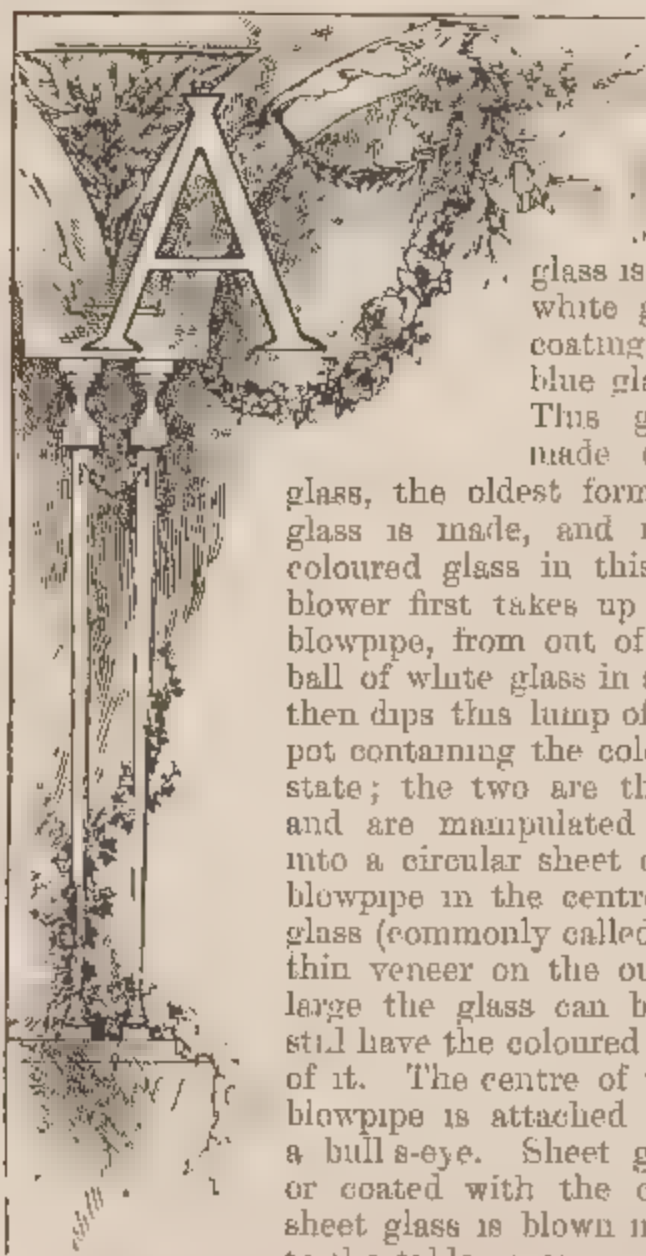
glass is simply the ordinary white glass having a thin coating of ruby, green, or blue glass on one side of it. This glass is principally made of table or crown

glass, the oldest form in which window glass is made, and is coated with the coloured glass in this wise. The glass-blower first takes up on the end of his blowpipe, from out of the melting pot, a ball of white glass in a molten state. He then dips this lump of white glass into a pot containing the coloured glass in a like state; the two are then blown together, and are manipulated until they expand into a circular sheet of glass, having the blowpipe in the centre, and the coloured glass (commonly called pot metal) forms a thin veneer on the outside, and however large the glass can be extended, it will still have the coloured glass on the outside of it. The centre of the table where the blowpipe is attached is commonly called a bull's-eye. Sheet glass is also flashed or coated with the coloured glass; but sheet glass is blown in a different manner to the table or crown glass, but is

ETCHING ON GLASS

Etching upon glass, while being essentially the same process as embossing glass, differs in its manipulation or method of working. For while the stopping-out paint or ground is put on with the brush, the ground for etching is spread on the glass in sufficient quantity to flow and cover the whole of the surface, and the design is put upon the glass by removing or scraping off the stopping and leaving the glass exposed to the action of the acid, just as etching upon copper, zinc, or steel is done.

As a rule, the grounds for etching are not laid on so thick as for embossing, simply because, in the first place, etching work is not required to be bitten so deep into the glass as embossed work; and secondly, because if the ground is too thick it renders it very difficult to make fine lines as clear and sharp, or to place them as close together as required. Any of the stopping grounds we have before recommended will answer the purpose, but should be made thin enough to allow of its flowing evenly on the glass. If the glass to be operated upon is of small size, a coating of white wax will serve for a ground, and may be put on to the glass by first putting the glass before a fire and leaving it there until it acquires sufficient heat to melt the wax, a cake of which is cut to a square edge and rubbed upon the glass while it is hot, which melts the wax, and thus it is coated all over. If it is not as evenly spread as it should be, the glass should be held before the fire, until the wax will flow evenly, held in a horizontal position and moved about. Upon this coating of wax a little soot may be brushed with a badger hair softener, the wax will hold sufficient of the soot to partially blacken it, and we are thus better able to see the lines we make in etching. The back of the paper or design to be etched should be rubbed with a little fine whiting, white chalk, or dry white lead, having only just enough white to make a distinct mark upon the wax; this paper is then



How the glass is made

The reverse of embossing

The reverse of embossing

Thin grounds

Wax ground

Spreading the ground

Soot brushed

* When again required it may be softened by putting in hot water

THE SIGN-WRITER AND GLASS EMBOSSE

11

placed upon the ground and the design lightly traced with a fine point, which results in the design being left on the wax in fine white lines. We now use the etching points; these are tools of different thicknesses, somewhat like a common stocking needle for fine lines, others being broader and flattened at the end for scraping. With the fine needle the outline of the design is marked, the stopping ground being scraped away by the needle or scraper, leaving the glass clean and exposed to the acid. The shading is then put in by cross hatching, that is, lines crossing each other, and also by straight and curved lines placed close together. If broad lines are required these are made with square-ended scrapers, something like ordinary modelling tools.

Etching point.

Lines only.

THE APPLICATION OF THE ACID.

The acid may be applied to small, or correspondingly small, pieces of glass by putting them into a bath of acid without using walling wax, but in this case the whole of the glass or other article must be coated over with an acid-resisting medium, and for this purpose Brunswick black is the best. The back and edges of the glass should be covered with this; it dries tolerably hard, and will, of course, bear handling, differing in this respect from the stopping on the front of the glass. Gas globes, lamp glasses, glass shades, or indeed any shape of article may be etched by use of the bath for acid. Another method of applying the acid is by vapour, produced by putting a quantity of fluor spar into a leaden cistern and pouring sulphuric acid upon the spar, a slight heat is then applied to the bottom of the cistern, and immediately a white pungent vapour will arise; the glass being previously placed over the box, face downward, so that it will come in immediate contact with the vapour, which will condense on the object and eat away the exposed parts of it. This method takes a longer time for the acid to complete its work than when it is put upon the glass. The third method is that we have before described with the walling wax.

Protecting the front of the glass.

Quickening the acid.

(CHAPTER XV.

WHITE ACID



Sheet glass difficult to obscure.

COMING now to the description of a most important improvement which has been introduced of late years in the obscuring of glass by means of an acid, instead of grinding it as before described. As we pointed out, sheet glass by reason of its uneven surface could not be ground or obscured in the same manner as plate glass, although this difficulty was in some measure obviated by means of the sand blast, but as the latter process

requires special machinery to work it, it was of necessity confined to the use of large firms, and, of course, its practical usefulness was limited in consequence. Certain chemists had for many years directed their attention to the manufacture of an acid that should produce an opaque or semi-opaque matt surface as near the effect produced by grinding the glass with emery or sand. At length a celebrated French chemist succeeded in making an acid that would deaden the glass, producing a surface through which light could pass, but which could not be seen through. The importance of this invention to the glass embosser or glass writer cannot be over estimated, as by its use sheet glass can be used instead of plate, thus reducing the cost so materially that an extensive trade is done in a direction which before was practically closed to the general public. In enumerating the advantages derived

Importance of the white acid.

And we give.

from the use of this acid, we may point out first that while hitherto the designs on the glass must be embossed or sunk beneath the surface before the body of the glass could be obscured or ground, we can by the use of this acid obscure any fractional part of a sheet of glass without the designs being embossed. And in the second place, designs may be put upon the glass with the acid, the design itself being frosted or obscured—or the design can be left bright and the ground obscured—and these can be coated with silver in the same manner as mirrors are done, and the effect produced will be of dead and bright silver, or matt and burnish. Gold and silver leaf may also be used for the same purpose, producing admirable effects. This is the more readily done because the white acid, while effectually producing a dead or matt surface, is not so rough or coarse as the surface produced by the grinding with emery or sand, and from this cause it is also not so white a surface as the latter. The grinding roughens the surface of the glass, and being rough it presents innumerable minute angles to the light, which reflect the light, and so produces a whiteness which the matt of the acid does not effect, although the difference between the two is so slight in looking through them that it is not readily perceptible. It will be obvious that the effect produced by this white acid may be utilised in many ways in combination with gold and silver leaf, or with the simple contrast of the dead and bright surfaces alone. A dead ground and a bright letter, outlined with a black or a gold line, will have a very chaste effect. We have seen some most beautiful effects thus produced. In fact, there is a very wide field for the exercise of manipulative skill and good taste in this direction.

A finer surface.

Variety of effects to be got from this acid.

The French make admirable use of this in the decoration of large window spacing for restaurants, and obtain some beautiful effects in the contrasts between the matt and bright surfaces.

HOW TO USE THE ACID

In using the white acid the same care is required as in the etching. The design must be put upon the glass in the usual manner as described before, and a wall of wax or grease put round the square and the acid poured on, but only just sufficient to cover it, and let stop on for thirty or forty minutes; then poured off and the acid washed off with cold water, then the black washed off with spirits, and the glass well washed again with soap and plenty of clean water to take off the remains of the black from the glass. This acid may be used again and again. After being used, the acid should be tested on a small piece of glass, and if it bites the glass unequally, or freely, a little strong fluor acid must be added to it until it gives an even deadness or matt. If properly used the same acid will do a great amount of work.

The bowl.

Cleaning off of or the acid.

In giving our readers the information contained in this article, it is calculated to obviate numerous difficulties which stood in the way of glass and sign writers, who, while desirous of executing such works, were deterred by the difficulty of grinding the glass afterwards, making any attempt at embossing both costly and laborious. The white acid process does away with all this labour, and even in the case where glass is embossed we have simply to cover the embossed parts with the Brunswick black and then put the acid on, and it does away with the necessity of grinding; this simplifies the matter and enables any of our readers who are desirous of doing this kind of work to do so without having to depend upon anyone else for aid.

As a matter of course the French, being the inventors, supplied this acid on its first introduction; but a better article than the French acid may be procured from Messrs. Wilkinson & Son, the eminent chemists, of the Attercliffe Chemical Works, Sheffield, who are also large makers of the best quality of fluor acid, and from whom prices and all particulars may be obtained. We may note also that this firm send out a special make of Brunswick black for glass embossing, which they guarantee, an advantage which our readers will know now to appreciate, as it saves all trouble and doubt in the working.

Reducers of waste acid.

THE SIGN-WRITER AND GLASS EMBOSSESS.

(CHAPTER XVI)

ANOTHER METHOD OF EMBOSSESSING ON GLASS.

As shown in
the illustration.

THESE is a process of etching ornament or letters on glass for embossing which is, in a great measure, the same as is used for etching on copper, and is called—when so used—the brush system, in contradistinction to the etching proper with the point. This process, when applied to glass work, is as follows:—

The glass is first made perfectly clean, and must not afterwards be touched with the fingers. We now mix up a little dry colour with a strong solution of white sugar. The colour must be an impalpable powder, as the presence of any rough colour or grit would defeat the end in view. These must be thoroughly tempered and mixed together, and then mixed with about half the quantity of a solution of ox gall. With this solution the ornament is pencilled in and left to dry hard; when this is the case we pour sufficient Brunswick black, or other stopping-out ground, as will cover the whole of the glass, and, by moving the glass first in one position and then in another, we cause the black to flow evenly over the whole surface without disturbing the pencil work, which we should do if we put the black on with a brush. We now put the glass away for twenty-four hours, or until it is hard enough to bear the action of the acid. We then put the walling wax round, as before described, and pour on the acid; after a little while we take a feather and brush off the sugar solution, which by this time will be breaking up all over the plate; the feather will clean off all the solution, and leave the ornament exposed clear and sharp to the action of the acid, which is then manipulated as we have before described. In many cases this will be found a useful process.

Clean off.

A GERMAN PROCESS.

We conclude this subject with the account of what is called a new process for rapidly etching and matting patterns on glass, invented by a Dr. W. Grune, of Berlin, and is described in the following terms:

Aqueous fluoric acid dissolves glass without exercising a visible influence upon the remaining surface, leaving it approximately bright. Profiting by this peculiarity in its corroding power, the inventor has availed himself of reserving materials which have before been thought comparatively useless, in consequence of their feeble resisting capacity. These substances, if placed upon glass in very thin layers, and even dried and hard, will give way in a few seconds to a solution of fluoric acid in water. Being simply used for the above purpose, very faintly marked, and bright results will be seen; but, if they are powdered when placed on the surface of the glass with very finely divided metal, copal, or other substance resisting the action of the acid for

a longer time, and are allowed to dry on after breaking them with the acid, a more or less matted result is obtained. The practical advantage of this invention is that, the corrosive action being very quickly performed, those parts of the pattern required to be bright need not be covered by any resists whatever.

Only feebly resisting substances being required, which would be useless for the ordinary method of procedure, all the well-known methods of drawing with the brush, pen, stylus, &c., can be employed.

The inventor also takes advantage of thin and thick resists, using sometimes fine and coarse materials for powdering, obtaining thereby a matted appearance of different density of grain or surface. In drawing, one can, therefore, obtain different variegated degrees of shading by the simple use of various materials on one and the same surface.

Degree of
matt.

In describing the *modus operandi*, the process is divided into two parts—firstly, the simple process by which a matted pattern or drawing is put upon the glass, and secondly, the double process by which a bright pattern may be reserved upon the glass, the ground work being matted.

For the simple process, the drawing is put upon the object either by hand transfers or direct printing, with almost any oil or varnish mixed with a little colour to make it usable; it is then powdered by means of a brush or tuft of cotton wool, or in other suitable manner, with pulverised metal, copal, or similar substances, or bronze powder may be used. After being dried, it is dipped in fluoric acid, or the acid may be put on with a brush. After a few seconds the powder begins to shell off. The glass is then washed in water. It is not necessary to remove the greasy printing colour, which comes off in the process.

Printing or
painting

The double process is thus described by the inventor: First, I either paint, draw, or print the pattern in a material which will resist the action of the acid; when dry, I oil over the whole surface by means of an ordinary printer's composition roller, with a greasy printing colour or oil varnish, then powder, treat with acid as before described, and wash off the acid; I then remove the resisting pattern, either with an alkaline solution, benzine, alcohol, or like solvent. Instead of applying the acid as a bath, or by a brush, I may apply it in the form of a fine spray.

An important feature of this invention is this: that whereas other patterns or designs in vitreous etching are depressed below the surface, by this method the deadened or matted portion is raised above the surface, as may be tested by running the finger nail over it.

The invention may be summed up as follows: The powdered materials allow the acid to flow between the particles, thus leaving a series of minute spots or holes between each particle, caused by the acid directly attacking the minute uncovered portions, and indirectly attacking the particles forming the resist (leaving them deadened), and thus a number of minute and imperceptible holes or depressions produce the deadened effect. The pattern may be bright and incised while the ground work is dead and intaglio, or the pattern may be in intaglio and the ground work bright and incised.

Summed

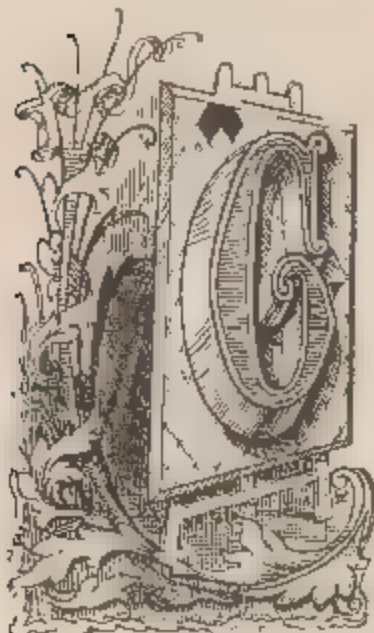


GILDING ON GLASS.

By MR. WM. BARBER,

TEACHER OF GRADING AND WRITING AT THE MUNICIPAL TECHNICAL SCHOOL, MANCHESTER

In the following Chapter by Mr Wm Barber it may appear that we are repeating ourselves somewhat, but it was our wish that our readers should have the experiences of two men both experts in their work, and if their practice at times runs on parallel lines it will be "confirmation strong as holy writ"; if it diverges, then the different experience will be useful if only as showing how two men, working to the same end, compass it by different roads. Mr Barber is a writer of acknowledged ability both on wood and glass, and his statements may be accepted as backed by long practical experience.—EDITOR.



CHAPTER XVII

GLASS GILDING, both plain and ornamental, is now very extensively used for interior and exterior decoration. In our large towns almost every business house of note patronises this branch of art, and although the cost is greater than that of wood signs, it is a more effective and lasting means of advertising, and in the end far the cheapest. Gilding on glass done 20 and 30 years ago, to-day looks none the worse. This speaks volumes in its favour, and often settles all doubt when the question

of cost is under consideration. In the hands of a skilful artist the most beautiful and artistic results may be produced, and its applicability is without end, so numerous are the purposes to which it may be put. Its permanency, however, will depend, of course, on its situation, for an ill-ventilated and damp room would be just as injurious to glasswork as it would to furniture, &c.

In writing a glass sign every process used in painting and writing on wood or metal signs is reversed; the last stages of work on the glass, are the first on the wood or other painted sign, and vice versa. Again, glass-writing is more difficult to the unpractised hand because it is written *backwards*.

Water-size is used to make the gold adhere to the glass, consisting of a very small quantity of isinglass dissolved in boiling water.

It used to be considered necessary to add pure spirits of wine or Hollands gin, but this may be entirely dispensed with. I may say I have used thousands of books of gold on glass, without a single drop of alcohol being used in the size; its only use is that it assists in drying the work by evaporating quickly. Without doubt many have made attempts and failed in getting a good burnish in glass-gilding, the chief fault being bad joints where one leaf overlaps another, and small coral-like patterns, which show traces of grease (the greatest enemy to glass gilding). We will now suppose the student is ready to commence operations, and assume we have a glass sign to execute gold letters, with a gold margin round the glass, and having a painted ground, the *modus operandi* is as follows.

Get a piece of lining paper, the size of the glass sign, and set out on this with charcoal, say—

JOHN BROWN, SIGN WRITER & GLASS EMBOSSE.

Let the name be larger and more prominent than the remainder of writing. Care in spacing and distributing the lettering is very important. The margin line is one inch from the edge all round, the writing being kept clear of this one inch; allow room between the letters, do not let them touch each other, and keep a clear space between each word.

But I will suppose the student is able to do the setting out without further aid. We now get a strong needle or other sharp point (a button hook straightened out and

pointed smoothly would be a handy tool for the purpose), prick the outline of letters and ornament, if any. This is best done by placing a piece of felt or cloth on the table under the paper, pricking over the outline and leaving perforations sufficiently open to allow the whitening to pass through when pouncing. Large letters, both curved and straight, may be pricked with a tracing wheel (price about 8d.) as used by dressmakers, which saves a great amount of time, and answers equally well. A piece of muslin or flannel, with some dry crushed whitening tied up into it, makes a good pounce bag.

We now examine the glass for scratches, using the best side for gilding upon, if free from marks so much the better, a scratch across the gold looks very bad. Lay the pattern on the front of the glass to read as you would see it when finished, remembering that everything on the gilding side is reversed. I mention this again, because I have known mistakes to have been made and not found out until there has been a considerable loss of time and material; the first error, however, generally suffices to protect the operator from repeating it. We now pounce over the whole of the pattern, and on removing it find an impression of it in a dotted white outline on the glass.

The tops and bottoms of the lettering, having only had an inch or so perforated at each end, we complete these with the chalk-line. Crochet cotton is the best to use for this purpose; make sure the lines are square across the glass. A strip of paper the height of the glass, with the distances pricked on, can be used throughout the work with more accuracy, the margin lines being next struck.

Turn the glass over now, and proceed, on the side to be gilded, to clean it; have plenty of clean water, a clean sponge, a clean chambray leather, and a clean polishing cloth. I put the stress on the word *clean*, because, if there are any secrets to observe, this is one of them. Get a plate or saucer with some whitening in it, soaked; dip the sponge in this, and rub over the glass carefully and well, being just as particular round the edges; this will kill all dirt and grease, and help to remove it; for, as the glass comes from the makers, a chemical bloom may often be noticed on its surface; the application of whitening also removes the tendency to cissing. Now we clean this off entirely with sponge and water, and round the edges particularly, and dry with the leather; but before doing so the glass should be placed into position for gilding. I use an easel for this purpose; some prefer the glass being laid on a table, with one end raised so as to drain to one corner; the work dries more quickly when placed on easels. Polish the glass well with the cloth, and after this the fingers must not touch it, or a greasy mark is the result, even though you may have washed your hands only a minute before. So be careful in handling, both before and after gilding, until the writing is complete.

Our next stage is the preparation of the size, which is composed of isinglass, an article commonly used for cookery purposes, but not always pure; therefore it is important that we see that we get the genuine article, otherwise we might produce results with common tub-size almost equal to the adulterated isinglass. Swinburne's 1oz. packets, one shilling, are guaranteed genuine, and may be relied upon.

Get a white enamelled pan to hold about a pint or quart, and don't allow it to be used for any other purpose whatever than for making the size. The quantity of isinglass to be

Method of
pouncingThe glass
being next struckAvoid all
greasePreparing
gilding size

THE SIGN-WRITER AND GLASS EMBOSSER.

used can be best calculated when I say that a lady's thimble would hold sufficient to make from one-and-a-half to two pints of size. Put into the pan about half this quantity and about a pint of water, boil over the fire, or better still on a gas-stove. When boiled strain through a piece of fine silk or muslin, into a perfectly clean basin, then it is ready for use. A flat tin bound camel-hair brush, from two to three inches wide, for laying the size on with, is required. This should always be hung up after use, and kept from dust.

Tools for
gilding.



THE gilding cushion and knife call for no remarks, but a complete set of camel-hair tips are wanted, varying in width and length of hair, the short-haired for small letters and lines, and the medium and longest hair for larger work, such as laying leaves of gold on the glass that require no cutting up. The gold to be used should be of good quality, and kept in a dry place. Gold will tarnish round the edges if kept a considerable time exposed to air and moisture, and if used for glass-work this would soon assert itself. The gold beaters supply gold-leaf specially for glass-work, the books of which are free from rouge powder, leaving no deposit on the glass, and giving much less trouble in obtaining a clear burnish; but gold in this state must not be kept for more than a week or a fortnight, or it sticks fast to the books, thereby causing much waste; in fact the gold-beater supplies to order only. Very satisfactory results can be achieved by using such as is sold for general work, but it is always better to ask for special "glass gold."

Now take a book and put out into the cushion the whole or a portion of the gold. Taking the cushion into the left hand in the customary manner, and the knife and tip between the fingers of the same, get the flat camel-hair brush and dip into the size, commencing at the bottom of the glass, wet the surface, flowing it on freely; now commence gilding from the top downwards. Should there be much cissing, that is, the size leaving the glass dry in perfect rings) then the size is too weak, but if too strong the gold will float down the glass and give trouble. It is better to gild on weak size than have it too strong. Leave the bottom margin line gilding until the last, for although the glass may have been perfectly cleaned there is always a tendency for the size to creep upwards for an inch or two from the bottom edge, bringing with it any particles of dust or whiting that might possibly have been left on the edge, or flowed downwards from the gold during washing. It is much the best to leave this edge until all the other gilding is finished, and, turning it on its side, with the damp leather clean off the size that has crept up. A thin cloth is better used for this purpose, but large letters to look well should be coated twice, or, as it is termed, double-gilt.

I have now got our first coat of gold on. When quite dry this requires gentle polishing until the loose pieces of gold are free (for this forms itself into a powder, and would scour the gold). With a fresh piece of wool and more pressure polish well; this will find out faulty patches, if any. We now wash well with hot size, which may almost be poured on. After this is dry polish again, and examine the glass from the front side for bad spots or marks between the glass and the gold, which should not be found if we have strictly attended to the foregoing rules; but all cracks in the gold or pieces that have not been quite covered may be pieced up in the next washing. When dry polish again, and using plenty of hot water or very weak size, wash again until the desired burnish is obtained, when it may finally be finished with very strong size double the strength of that for gilding. As these are but small letters the one coat is sufficient. The margin may look poor and faulty, but a second coat of gold before the final washing will improve this. When all is perfectly dry it is ready for the pencil and Japan black.

Now place the glass on the table, taking care not to soil with the fingers any parts of the gold; use a dry cloth, or paper doubled, for handling purposes, although this will sometimes leave marks of moisture, it arrests all grease.

Place the pounce pattern, on the glass, the reverse way to before, and pounce on very gently over the gold, but so as not to leave too much whiting on the gold, which chokes the pencil when writing in. A rub over the paper from the hand or a piece of felt is quite sufficient to leave an impression; striking the lines as before, commence writing, using a suitable sable pencil. Vegetable black ground fine and added to the "Black Japan" gives more body; this it is necessary to do when letters are left without a ground, and only varnished over, in which case cover the edges of letters and form an outline of varnish on the plain glass one-eighth of an inch wide to protect against the window cleaner.

Allow the black to get hard before attempting to clean off, or there will be a danger of peeling. Twelve hours is quite long enough to harden if good black is used. Clean the superfluous gold off, using a soft distemper tool tied up, or a stencil brush not too stiff, and damping the tool slightly on a wet sponge, dipping in whiting occasionally, removes it more freely.

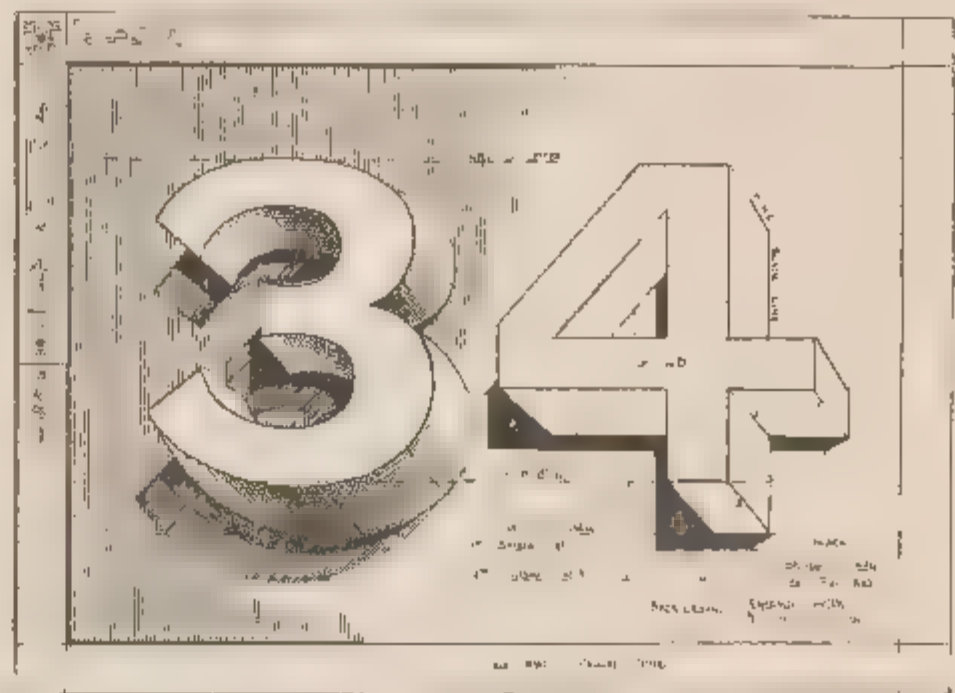
Avoid using water too much now, as during trimming off breathing on the gold is sufficient to loosen it from the glass where not protected by black. Use a quarter inch joiner's chisel, or similar edged tool, and a straight edge, and T or set-square, proceed to trim off where necessary, such as tops and bottoms of square letters; but curved letters should be left finished from the pencil. The French carve may be used, but it is not always satisfactory; any other points on the letters may be trimmed with the penknife. Now, as the work is so far advanced, it is ready for painting in body colours or glazes. Suppose we outline the letters chocolate, or black, and paint the ground a cream or lemon colour, this would look very effective and read well.

THICKNESSING, OR RAISING AND SHADING

I will now proceed to describe the method of giving to letters a thickness, or what is better known to many, as shading and shadowing. The shading or thickness may be worked up to look very pleasing and beautiful. Also the coloured stencilled effect and pencil work on gold borders.

We will suppose we have a large square pane of plate glass over a shop doorway, on which is required, in gold, a number, with border in colour, on gold—the number to be raised, that is, to have a thickness, and to appear as having been cut out of the solid wood, painted, gilded, and fixed there.

The accompanying sketch will show exactly what is meant. Set out on paper, first drawing the margin lines about $2\frac{1}{2}$ inches from the edges, then the top and bottom lines of figures, or letters, as the case might be. A little judgment is required in this so as to get a uniformity of background space around the number when completed; to do this, supposing the number 34 is required to be as large and bold as possible, good square-shaped letters would



look well by square-shaped is meant having length and breadth equal, thus figure 3 is actually curve-shaped, yet drawn from a plan which is square or thereabouts, we will say 12 inch figures and a thickness of 2 inches, that would occupy 14 inches of space, and what is left when measured from top to bottom should be equally divided, as shown in sketch, at line of letter at top, and line of thickness at the bottom.

Cleaning off
the gold.

Trimming
the gold.

Allow for the
margin.

THE SIGN-WRITER AND GLASS EMBOSSE

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We draw the figures with a 2 inch stroke; due allowance must be given in setting out that room is left for the thickness on the shading side, taking no special care for the shadowing on the opposite side which is not important, being treated only as a portion of the background to relieve the letters or figures as in this instance. The shading or thickness side should be governed by any previous work that may have been done in close proximity, or that side is most proper on which the sun sheds its rays most; but inside a shop that is quickly arrived at the window light rules and settles the question.

If the glass was being done in the shop we should prick this pattern and pounce on the glass as before; but as we are going to gild the glass in its fixed position, we proceed to pencil in the outline of letters on lining paper, with a camel hair or sable pencil, and spirit black or Black Japan thinned with turps. This done, with some paste or gum brush round the edges of paper, and place it on the *front or outside of the glass*. The inside must now be cleaned and gilded as before described, and the letters painted in and left to dry, whilst in the meantime we prepare the border.

RUBBING OR BRUSHING OUT THE BORDER.

Tin foil for stencilling

From a piece of tin foil cut a strip of about 9 inches long and $2\frac{1}{2}$ inches wide; straighten it out, and rub over it with whiting, adding a little size to fasten it. When dry, draw your design on this, leaving the outer edges as lines about half an inch wide to enclose the pattern. A simple guilloche, fret, or lace design would look well. Cut out on plate glass as you would a pattern in paper. Paper itself would not do for rubbing-out purposes. Tin foil adheres closer to the glass, will not wear away like paper, and leaves a sharper edge to the gold and pattern, either when stencilled or rubbed out. Commence rubbing out in the middle in each case, and work to the corners; assistance will be required in this, to hold one end whilst rubbing out or stencilling, as the case may be; breathing on the pattern and gold will moisten it sufficiently to remove the gold where the coloured design will be. The lines may be trimmed level afterwards by using a piece of stick, chisel-pointed, and the straight-edge; but in the case of etching, use a round blunt point. When all is trimmed and clean, get some French oil-varnish, and go over the whole of the gold to protect it against damage, previous to putting the colours in with the pencil; leave it to dry, and afterwards clean off all superfluous gold.

PAINTING THE SHADOWS

Paint the shadows first

We are now ready to paint in the shadows to the figures, for the darkest we will use black; when this is set, follow with a medium between that and the background colour, leaving the back-ground till the last. We have now clear glass left where the thickness will be represented; the painted portion should have another coat of the background colour at least, before blending commences.

This is a pleasing portion of the work, giving light, shade, and reflection.

As this portion requires more than mere words to teach properly, I may presume that the anxious student has had a fair amount of practice, and has a fair knowledge of light and shade. It is necessary, to become perfect, to acquire a knowledge of drawing from models.

If the sides of a block letter are intended to represent any colour, such as gold, or silver, salmon, or blue, it should have a lighter and darker shade of its own colour, heightened up with white.

BLENDING

Harmonious colour

In blending, a camel hair or sable pencil should be used for each, four in all; also large fitches for blending with. The fingers are good blenders, but it is not a clean way of working. Indigo may be blended with dark blue, dark blue with pale blue, pale blue with white; also chocolate—venetian red; venetian red—yellow; yellow—white. Colours for blending should be mixed—two parts oil, one part turps, one part varnish, with sugar of lead or patent driers added.

Varnish with French oil or maple varnish; this is presuming the border has been finished in one or more colours, and the whole of the work painted over. Inside the shop it would have a more presentable appearance if painted a light colour, and finished with a line and corner.

SOLID GILT GROUNDS

In gilding grounds solid (whether the glass is plain or embossed), with black letters, line, and corner, the glass should be kept clean during the writing, and cleaned both before and after the writing is dry. Previous to gilding, the leather and polisher only should be used for the last cleaning. Keep whiting away this time, or it may not be entirely got rid of. Great care must be taken, if trimming the letters has to be resorted to, not to leave any marks from the chisel. Breathing on the glass will allow the trimmer to remove the paint where required, and with no danger of scratching.

Suppose we have a frieze sign lettered and ready for gilding solid—say, 18ft. or 20ft. in length the glass would be ordered either in two equal halves, or the letters set out beforehand on paper, and let the nearest upright line of a letter that is nearest the centre of paper be the length of one glass, the other to make out the entire length, using the best ends of the glasses for making the joint.

With a pair of easels in position we place the glasses on lengthwise, and gild from top to bottom and from right to left, or left to right, as is most convenient. One end should be raised so as to drain off more readily to one corner. Long haired tips will pick up whole leaves, and each should lap well over the other. Avoid grease on the hair as much as possible during glass-gilding, or it will leave a few traces of it on the glass similar to frost patterns.

AN INTERESTING EXPERIMENT

As an instance of what a very slight amount of grease will do, take the following as an experiment: Have a pan of size made, and your glass perfectly clean. If the size is not too strong it will drain from the top, and commence to open out in a few places after a short time. Now take a pin or needle and thrust it into anything fatty, such as butter; draw it out and examine it closely, and from its appearance you would not think it had been near it if you had not done it yourself, and you might take it to be clean; but now dip it into the pan, and dip the brush in and on to the glass, and see the result—hundreds of tiny rings formed immediately.

MATERIALS FOR "BACKING"

Varnish and paint will fasten gold to glass, but Black Japan is harder and better, and dries quickly. So hard does it dry that if left for a few days before trimming off it gets quite brittle, and the more so if turps has been added to it from time to time.

Black Japan should be well corked, and used as it is supplied by the makers. In a very warm room it will work freely and thin, but the reverse is the case if the room be chilly and damp. If the pencil should become hard through being left for a few hours without rinsing out, or even a few days, warm turps will begin to soften it at once by humming it between the thumb and fingers.

When pencilling on the gold let it (the pencil) be free from tallow or moisture, or evil results ensue which can never be righted.

For etching coats-of-arms, crests, trade marks, or other designs on gold, use a pointed piece of boxwood, or other fine-grained wood, softer in texture. Also for shading use a fitch having short stiff bristles.

A piece of hard soap may be used for setting out lettering on glass.

REPAIRING DEFECTS TO A GLASS SIGN.

If, when writing on gold, a mistake occurs in the lettering, it is not necessary to clean the gold off, but with a piece of cotton wool, saturated in turps, rub over it gently until it has softened the Black Japan; repeat again with clean wool, and the gold will be left perfectly clear, without the least injury to its burnished appearance; but don't let water touch it, or it is ruined. The work may be re-pounded and written.

In the same way the black can be removed from the gold after the lettering has been finished, previous to varnishing, leaving the gold visible on the back as well as the front of the glass, varnishing afterwards. Ornament and lines would then appear as proper, on both sides, and would have a pretty effect if outlined with black.

In conclusion let me add that this chapter has been written to supply the wants of those who have not the opportunity of seeing how it is done, and are in earnest. It was not intended to teach anything to the craftsman who has already attained proficiency in this branch of art, which 50 years ago was almost unknown, or rarely practised.

Don't use whiting.

Raise one end of the glass.

The power of grease.

Moisten your pencil.

Removing a mistake.

LETTERS IN PROJECTION AND PERSPECTIVE.

By MR. ALBERT HOYLE.

[In this Chapter on Letters in Projection and Perspective, by Mr. Albert Hoyle, we have the question approached from the standpoint of a scientific mind. Here, again, we have thought it desirable that the two points of view should be put before our readers, and though to set out a sign on these lines would be very formidable and impossible in practice, yet a mastery of the principles laid down by Mr. Hoyle would give the student a decision and certainty in his work which would compensate him for the time spent on mastering the laws of perspective. EDITOR.]

CHAPTER XVIII.



THE first law of lettering is legibility, therefore a sign is always painted on a surface approaching flatness, generally attaining it, because otherwise legibility is lost. The letters on a sign are symbols, having only the two dimensions length and breadth. Thus, a sign-writer is an artist who works in two dimensions. If, for the sake of variety or contrast, he writes some of his letters in perspective, which suggests three dimensions, he does it at the expense of strict consistency and fitness; also the greater the perspective the less is the legibility. Anyone may see that letters in perspective are an anomaly; few can give the reason, which is here mentioned in order that perspective in signs may be kept to its proper place. It is to be regarded as a useful variant only, needing to be carefully limited and balanced in order that it may not destroy legibility and symmetry. This is proved by the fact that six lines of letters in perspective and one in elevation produce ugliness, and six elevations and one perspective line produce comparative elegance. As usually drawn, letters may be said to be in elevation. Between this method and the other extreme of complete perspective there are gradations, which it is necessary to carefully distinguish.

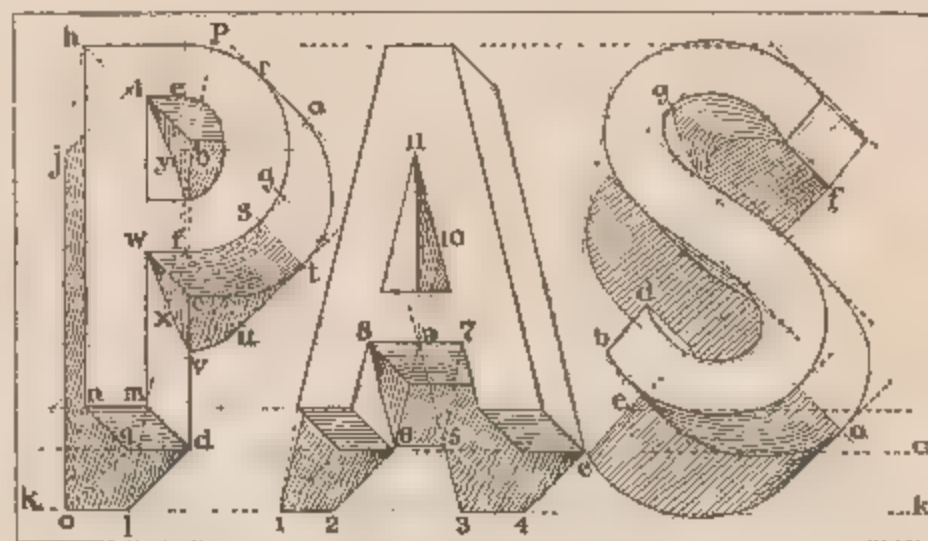
Assuming that the student is well practised in drawing letters in elevation, instructions are now given which will enable him to draw any of the others, and also to vary them to suit cases he will meet with in practice. Since these instructions contain all the principles, a little ingenuity is all that is necessary for this. If these examples are practised carefully on paper, they will give the power of producing the same effects on signs done in the sign-writer's way; that is, with few lines of perspective construction, just as only those architects who have practised perspective mathematically are able to make good freehand drawings of buildings.

The purpose of this chapter is to give directions for drawing the various kinds of lettering in the five plates, I., II., III., IV., V. It will be seen that these examples are graduated from ordinary lettering at the top of plate to full pictorial perspective at the foot of the same sheet. Each one has its peculiar uses and limitations, and they are all subject to the general remark that any departure from strict elevation is to be sparingly used, because it is really a license, not strictly warranted by the wholly abstract and symbolic character of letters. The word elevation is used in this chapter to denote letters as usually drawn, like the word colours beginning Plate I., because this architectural term serves to distinguish them from others, some in projection, some in perspective.

Plate.—The word "paints" on this plate has its letters drawn in elevation, but with more space between the letters than in the word "colours"; and these two are placed together to show this difference in spacing. The second example might have been drawn even if as closely spaced as

the first, but in that case the cast shadows would have been mixed with other parts. Thus it is usual in letters similar to these to allow extra space between. The art of spacing is, of course, too important to be mixed up with an extra subject like the present one, and it will be found fully treated on in another part. The word "paints" is intended to look as if in relief, or cut out of solid material and fixed against a board.

To produce this appearance, receding sides are drawn on the right hand, cast shadows to the left, and part of these cast shadows come on the receding sides. Various names are given to these sides, and since "blocking" is very usual, and descriptive, it is adopted in this chapter. Since the letter, as such, is complete without any blocking, the term letter is understood to mean the front, or essential legible part, and the term blocking means the other part, which sometimes does not recede, as in the nearest letters at the foot of Plate IV. It is assumed that in each case it will only be necessary to give the method for three letters, including vertical, horizontal, and curved limbs. With these as a guide, practice afterwards will, it is hoped, enable anyone to draw the complete alphabet, with the usual extras. Thus, if



we take the letters P, A, S, as in Fig. 1, all the three kinds of limbs are included. Supposing these three are drawn, widely spaced, in elevation, it is necessary to take the blocking first. To draw the blocking, set a straight-edge to a line a little below the letters, and parallel with them. On the straight-edge place a set-square of 45°, with its sloping edge to the right hand. From all the corners of the letters which have blank space below or to the right draw lines at 45° indefinitely. The P will be found to have four of these points, and its curved part will require a fifth line (a v) making a tangent with the shoulder. The S takes four of these tangents, and similarly with all curved limbs of other letters.

It is very usual to make the width of the blocking the same as that of the letters. This should be regarded as a maximum, except when great relief is desired, and it will be found that the best proportion is to make the length of the corner lines already drawn the same as the width of the letter, taking the thick straight strokes as a guide, because they are the medium between the thin strokes and the thickest part of the curves. One-half and two-thirds the thick strokes are good, and if the sloping corners are in

THE SIGN-WRITER AND GLASS EMBOSSESSER.

length the same as the width of the thick strokes the proportion is about three to five. The thicker the blocking the greater danger of a clumsy effect. This is because the letter should be principal, the blocking subordinate; and since the blocking recedes, it is in effect thicker than its measured width, owing to the perspective rule that receding surfaces diminish. This is proved by the fact that a blocking two-thirds the width of the letter gives the effect of a solid letter cut out of stuff nearly square in section. If the width is determined, set it off with dividers or from a marked slip of paper next a vertical limb, and draw a line parallel to the limb, as *b o d* to the letter *P*. The intersection of this line with the sloping corner at *d* will give the length of all sloping corners, and also a point from which to draw a horizontal line *d d* which gives the lowest part of the blocking of all the line. All other parts may be drawn by means of the length of the sloping corners, which should be retained in dividers or on a slip. Any number of sloping lines may be drawn and measured off to give points in the curves. In general they will be accurate enough if the two limits are determined, and one point between, as in the *P* *r* and *f* are limits, *g* is an intermediate point. When a

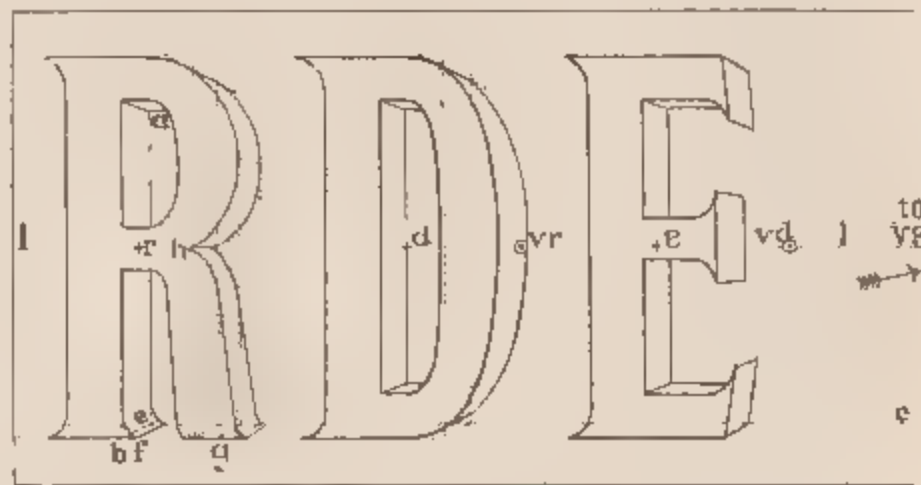


curved limb forms the top or base of a letter it is necessary to carry the curve a little over the horizontal guide line. This is because otherwise the letter would appear too small. The blocking of the curve will also be exaggerated in the same way. The *S* in the figure shows this plainly. Any projected blocking not in perspective may be drawn by measuring sloping corners where necessary.

To draw the cast shadows it is necessary first to draw part of the concealed blocking in some cases. From the point *k* draw a corner line *k i*, the same length as the others; and from *i* another line at the same angle of 45° in the opposite direction, *i j*. This second line is the shadow of the first. The other end of this shadow commences at *d*. It will be seen that the shadows are all at 45° , and that a horizontal line, *k k*, gives the downward extent of all. The distance from the line *d d* to the line *k k* is the same as the width of the first limb and the length of sloping corners to the blocking. It will be found that this arrangement gives the most useful proportions. The line *d l* is the shadow of the line *d m*, and its intersection with the line *k k* gives the point *l*, from which the length *m n* set off from *l* to *o* gives the starting-point of a vertical line from *o* to *j*, and completes the shadow. If the shadow is started from *d*, the point *o* may be found by any one of three methods. First, as described, by making *l o* equal to *m n*; second, by a line *q o* similar to *d l*; and, thirdly, by ordinates. The latter lines give the direction of rays of light from points in the letter to points on the background, and the curved shadows can only be drawn by their aid. Lay a straight-edge to the points *l* and *m*, and produce the line as far as possible. This will give the ordinate *m l*, and a long line *l p* by means of which all other ordinates can be drawn parallel to it. It will now be obvious that *o* and *j* could be obtained by ordinates from *n* and *l*, because *h j*, *n o*, and *l m p* are all parallel. The other shadows in the figure may be drawn in various ways, but they are described as they were done, and the student will find alternative methods readily enough if it is remembered

that all are drawn by one of the three above described, or a combination. On the shoulder of the letter is the sloping line of the blocking at *d r*. This should be drawn indefinitely long at first as in the figure, to make it easy to place the small cross mark at *r* exactly where the tangent should be, and the length then is set off from *r* to *a*. Similarly, a line at 45° in the other direction gives a tangent mark at *s*, and the line *s t* is in half-tone, and gives the commencement of the shaded part of the blocking. A diagonal at 45° from *t* is cut by an ordinate (parallel to *l p*) from *s* in the point *u*, and *t u* is the shadow of *t s*. Set off the distance between the lines *d d*, *k k* from *c* to *v*, and a line from *v* to *w* will give the shadow of the horizontal part near *w*. All shadows from horizontal limbs on verticals will be parallel to this line, but since the limb begins to curve at the point *f*, an ordinate from *f* will intersect at *x*. There now remain two curved portions of this shadow, which are not lettered owing to want of space. Between *s* and *f* draw two or three ordinates from points in the curve of the letter selected at random, and make them the same length as *s u* and *m l*. Through these points the shadow can be drawn from *u* to a point on the blocking, which will be found to come a little above *v*. Another flatter curve may then be drawn from *x* to the corner, and the junction between the curves is then seen to be an angle. The shadow above is drawn in the same manner, *z y* being parallel to *w r*, an ordinate from *e* marking the beginning of a flat curve which completes the outline. In the letter *A* points 1, 2, 3, and 4 may be obtained by diagonals or ordinates, and the upward sloping lines from 1 and 3 are drawn parallel to the sloping limbs of the letter. The horizontal line 5 6 is obtained by an ordinate from 7. It cuts the blocking at 6, and a line from that point to 8 completes the lower shadow. Draw the line 6 10 continuous, produce the line 3 5 to intersect it at 9, and a line joining 9 11 outlines the upper shadow.

The shadow of the *S* at *a* is similar to that under the elbow of the *P* at *t*. From this end to *b c* the curve is found by measured ordinates, taken at any points in the curve. A measured ordinate from *d* to *e* gives *e e* the shadow of and parallel to *b d*. From *e* a line at 45° makes a very obtuse angle at this point, and recedes to a nearly concealed part of the blocking. The curved shadow above (*d*) is drawn wholly by means of measured ordinates. From *f* a diagonal limits the end of the highest shadow. The other end is drawn by diagonals across the blocking combined with ordinary diagonals and ordinates. This is made necessary because a curved part throws a shadow on another part of opposite curvature. This part is drawn larger in Fig. 2. At *g* a tangent gives the commencement of the



shadow. From the line casting the shadow a number of points taken at random, *h i*, and others not lettered, are starting points for diagonals across the blocking to *l*, &c. From *h i* are drawn ordinates, from *j k* diagonals. The diagonals stop when they reach the blocking below, and from the point of arrest a diagonal across the lower blocking is drawn to intersect with the ordinate. This last intersection is a point in the shadow, and all others required are drawn in the same manner.

The letters "Cordelova" on Plate I. have a separate vanishing point to each. Supposing the three letters in Fig. 3 are drawn widely spaced in elevation, with their curved serifs draw the centre line *l l*. On this line mark the centre

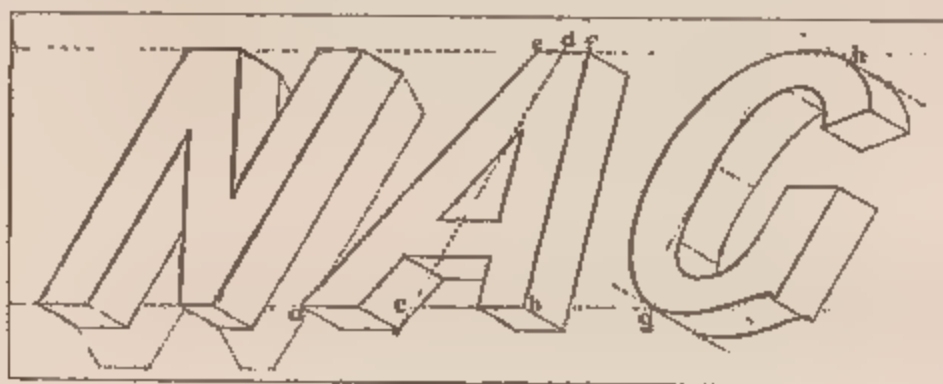
THE SIGN-WRITER AND GLASS EMBOSSESSER.

of each letter in the points t , d , and e . Take in dividers the height of the letters, and from the three points set off this distance to the right of each. This gives vanishing points for the letters at $v r$, $v d$, and $v e$. From the corners of the letters lines are drawn to the vanishing points. There are five from the R to $v r$, and four from the D to $v d$. In the figure the blocking is made half the thick stroke, and this width set off against the first limb of the R gives a vertical which intersects at a , from which a short horizontal finishes the top of the blocking. Continue the vertical line of the letter to the base at b , and from this point draw a line to $v r$, intersecting the blocking at c . The end of the serif is f , and a line to $v r$ gives the perspective edge of the blocking to the serif. A horizontal from c to e will enable all the rest of the blocking to be drawn. At g there are five perspective lines. The first is drawn by a vertical from h , and



a vertical from its end on the line from c gives the other end of h . The other four may be easily seen to give points required for the remaining parts, and the blocking to D and E is drawn by means of similar dropped verticals.

The line "Lincrusta-Walton" is drawn as in Fig. 4. If the serifs are disregarded it will be found that the nearest corner is limited by the horizontal lines $a a$ and $b b$. When the letters are sketched in between these lines, the sloping tops and bottoms are drawn at 30° by means of a set-square. The serifs are then drawn, and the letters are complete. This convention requires modification of some letters, which explains the reason of the curious form of the C and T. In the figure the blocking is half the thick strokes, and is drawn by corner lines at 30° , all measured to one standard length, which may be taken from $c d$.



In the line "Anaglypta" the convention is much more correct and elegant. These letters, being constructed on the isometric angles of 30° and 60° , may be labelled isometric italic. In Fig. 5 the N and G are easily drawn at the angle of 60° , but the A requires to be carefully balanced. After sketching it in, mark off its width at the base in the points a and b , bisect this at c , and draw a line at 60° from c to d . Make e and f equidistant from d . Lines from e to a and f to b give the outline of the letter, and the inner sides of the limbs are drawn parallel to them. In the figure the corner lines of the blocking are at 30° , and their length is the same as the width of the thick strokes. At the rounded corners, as g and h on the G, long tangent lines at 30° are drawn, and the corners measured from the tangent points carefully marked thereon. The curved parts of the blocking depend on this method for correctness in this case and in Fig. 1. If shadows are projected they may be at any selected angle, and drawn by the same method as in Fig. 1. The blocking would be more correct in balance if at 60° , or even 45° , and

it may be noted that this isometric convention is peculiarly adapted to lines of letters which slope at 30° , the letters being vertical, and the blocking at 30° in the opposite direction to the general slope of the line.

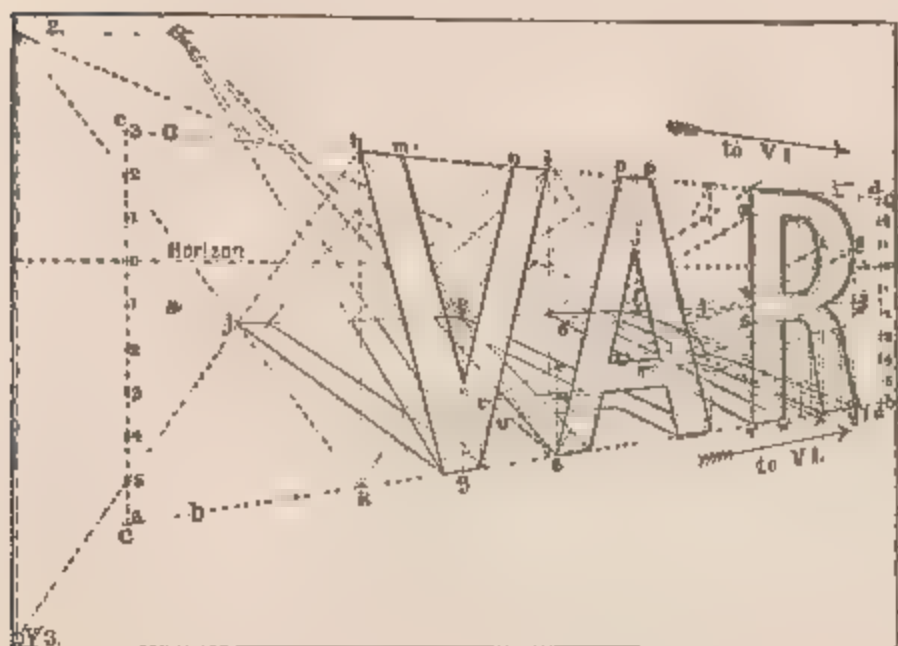
"Lignomur" consists of solid letters fastened to a horizontal bar in an oblong recess. They are made to appear leaning forward by the simple device of drawing them in elevation sloping to the left. In Fig. 6 the angle is about 75° , and the blocking and shadows on the ground are to right and left, and both 30° . It is assumed in the figure



that the rays of light descend at 60° , so that the shadow of a would be somewhere on $a b$, and the shadow of $a c$ would be at 30° from c to d . A vertical from d to e completes this construction, and the horizontal $e e$ is the shadow of the recess on its back wall, completed by drawing $e f$ on the left. A line at 30° from the base of the I gives its shadow as far as g , the remainder sloping up to h a little more vertical than the edge of the letter to allow for foreshortening on the end of the recess. Greater accuracy can be obtained only by making the perspective real, because the inclination of the letters represents a forward slope which cannot be fixed in this convention. A tangent line at 75° from i to j gives a point on the base line, and from j a line at 30° intersects with one at 60° from i in the point k . Since k is the shadow of i the curve from k to the base of the letter will be its shadow. Tangents at l and m give the starting points of the two small shadows, which, like all the curved shadows, can only be drawn by recollection of similar ones on vertical letters. The shadows on the N may be projected with accuracy. A line at 60° from n and one at 30° from o will intersect at p . Then $p q$ is the shadow of $n a$, and p is the shadow of n , consequently $p q$ is the shadow of $n q$. This shadow is arrested by the blocking at r , and a line $r s$ completes the shadow. If from s to t the concealed corner of the blocking is projected, a line at 30° to the left from s will intersect a horizontal from t at u , from whence a line parallel to the letter cuts the inside of the blocking at v . A line at 60° from the corner of the limb u gives the end of the shadow where it intersects with $v s$. It is assumed that there is no part in light behind the letters, which would generally be the case with such massive letters as these.

The suspended letters "Salamander," &c., are essentially the same as in the first example, without the shadows on the background.

"Harland's Varnishes" forms the second example of letters in perspective. The first is "Cordelova," with a separate vanishing point for each letter, which is a licentious convention, principally useful as showing that adherence to rule is the important matter; and even if the rule is a false one, it gives a certain consistency and look of correctness. The other examples are all in correct perspective, excepting that the letters are spaced and sketched in by guess-work. This is the correct method for sign writers, because if letters were projected from a plan the distant ones would become foreshortened to the destruction of legibility. In the plate the letters have a light line on one side to suggest thickness, but in Fig. 7 this is omitted, because they are really without solidity. In shading, the letters may be assumed to be opaque, concealing the ground and shadow behind the limbs; or transparent, so that letters and shadows are both complete and legible. If the shadows were on flat ground they would be illegible and difficult to draw, so they are as if on a sloping bank. For the same reason the horizon is one-third from the top of the letters in the figure. Mark the beginning of the first and end of the last letter by verticals, and the top and bottom of the largest and nearest letter. Fix the horizon two-thirds up this letter, and from the top and



bottom of it draw lines to the horizon to intersect in a point on it. If these lines *a a* and *b b* reduce the height of the last letter too much, the remedy is to shift the point further off on the horizon, and if in this way the point becomes inaccessible, it is usual to fix a tack at the vanishing point. When this is impracticable, and a centrolinead is not handy, the horizon should first be drawn, then a sloping line fixed either above or below, in the present instance the base line *b b*. Then a vertical should be drawn through these two at each end of the letters, as *c c* and *d d*. Divide both lines between the horizon and the line *b b* into the same number of parts. In the figure this produces six below and three above the horizon. This method of proportionate scales is infallible, but to be avoided if possible, because though all lines may be graduated by it, it is incorrect and troublesome. Supposing the vanishing point *v1* is fixed and accessible, lines are drawn to it from the top of the first letter. Then the letters are sketched in between the lines, care being taken to make them narrow as they approach the vanishing point. Both the width of the letters and that of the vertical limbs require carefully graduating in this way, and the first two letters in the figure also require to be balanced. The letters being sketched in it will be easy to mark the exact width of the *V* and *A*. From these points verticals should be drawn, and the spaces enclosed crossed by diagonals. These intersect at the points *e* and *f*, through which verticals should be drawn. The perspective centres of all oblongs in perspective are got in this way.

The vertical from *e* cuts the base line at *g*, and the base of the letter is then fixed by making the left part slightly greater than the right, because it is further from the vanishing point. Lines from the end of the base to *h* and *i* give the outline, the inner sides of the limbs being nearly parallel to them. They may be drawn parallel and look quite correct, but if the first line of the first limb was

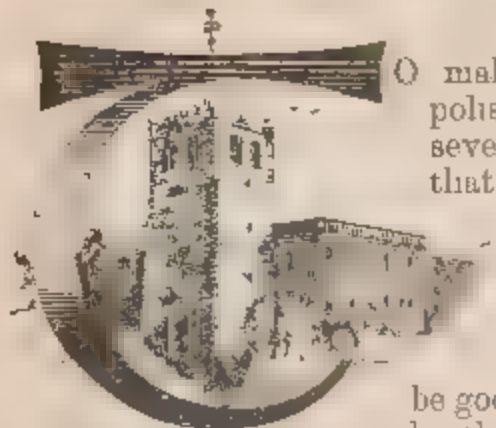
produced from *h* downwards, and a vertical from *v1* produced downwards to intersect with it, a second vanishing point would be found in which the four lines of the first limb of the *V* and the second of the *A* would vanish. In the same way the second limb of the *V* and the first of the *A* vanish in a point vertically over *v1*. In practice it is sufficient to remember that all parts become less in the distance, and consequently the first limb of the *V* and second of the *A* are a little wider at the tops, because they are nearer than the bottoms, and the second limb of the *V* is widest at the bottom for the same reason. The *A* is balanced in the same way as the *V*, and the horizontal limbs of *A* and *R* must be drawn vanishing towards *v1*. The next fixture is the upper line of the shadows, which in the figure is made half the height of the letters. Then a second vanishing point *v2* is required. This may be at any convenient point to the left of the letters. When it is provisionally fixed draw two lines to it from *k* and *l*, and the space to be occupied by the shadows is outlined. If the first line *k j* is too upright the first shadow will be too much concealed by the letter, and the point requires shifting to the left. If the second line *j l* is too horizontal the last shadow will be narrow and difficult to draw, and the point should be moved nearer. If the point is too high the shadows will conflict with the letters, but it should never be below the horizon, unless the shadows are supposed to run backwards downhill. By considering the first and last letters both vanishing points may be fixed, and then they are certain to suit all the letters between the ends. If the line *k j* is produced it will cut a vertical from *v2* at *v3*. The rays of light from all parts of the letters will vanish here, so that if four lines are drawn from *h*, *m*, *n*, and *i* to *v3* they give four shadow-points at *j*, and three other points on the line *j j*. Lines drawn from the base of the letter to these points complete the shadow. Two lines from *o* and *p* to *v3* intersect near *e*, and lines from the intersections to the base of *A* give its shadow. The lines of the bar of this letter are produced to *r* and *q* on the vertical from *s*. A line is drawn to *v2* from *s*, and lines from *r* and *q* to *v3* intersect this line at *t* and *u*. From *t* and *u* two lines to *v1* give the shadow of the bar. Verticals are dropped from *1* and *2* on the *R* to *x* and *y*, and four lines from *v*, *w*, *z*, and *y* to *v2* give the principal part of the shadow. The two horizontal limbs are produced to *3*, *4*, and *5*, and lines from these points to *v3* intersect at *6*, *7*, and *8*, from whence lines to *v1* give the shadows. The curved parts are drawn by noticing the manner in which they intersect the verticals *1x* and *2y*, and copying them on the perspective lines from *x* and *y*. If great accuracy is desired it can easily be obtained by means of dropped verticals from different parts of the curves, lines from the bases of the verticals to *v2*, and intersections with these lines by means of the points and lines from them to *v3*. It may be noted that the shadows of the first limb of the *V* and the second of the *A* have a vanishing point the same height as *v2* and to the left of it. The other vanishing point for the shadows of the two other limbs is visible in the figure.



SOME FORMULÆ FOR SIGN-PAINTERS.

CHAPTER XIX.

POLISHING VARNISH.



To make a thorough good job of polishing varnish work, there are several indispensable conditions that must exist. In the first place, the painted surface should be level got up with an even face, free from dirt, grit, or coarse colour. Secondly, the varnish must be good polishing varnish. Thirdly, the varnish bottle should stand

perfectly still without being moved about or shaken for days before any is poured out, and in pouring it out great care must be used so as not to disturb the whole bottleful, for, in a certain proportion of the varnish made, there are particles of gum only partially dissolved, but which, nevertheless, pass through the straining material in the making, and these sink to the bottom of the bottle. If the top part is carefully poured out these will not be disturbed, and will remain at the bottom. There are, of course, varnishes made by the best makers which are free from this defect. But the most important point is one that will, and, indeed, does, spoil the very best varnishes, viz., the using of an unclean brush to lay the varnish on with. It should always be borne in mind that a varnish brush cannot be too clean, and that except great care be exercised in this respect, the varnish dries on the bristles at the stock end of the brush, and, in working, breaks up, mixes with the varnish, and so gets on to the work and makes it gritty, or full of minute particles of the half-dried varnish, and thus both the varnish and the work are spoiled. It is not wise to use a varnish brush day after day without washing, except it is plunged every night into raw linseed oil up to and partially on the stock. When about to use it again the oil should be washed out of it with turps, and the brush allowed to stand.

The first process will be to cut down the surface of the panel or door with finely-ground pumice-stone, using a square piece of felt; or if this is not attainable, two or three or more pieces of soft woollen cloth will do, secured to a flat piece of wood with patent knotting, or the cloth may be stretched tight over the wood and fastened with tacks at the back. The pumice powder must be very fine, and great care must be taken that no coarse bits are mixed with it, or else the surface will be liable to being scratched—a scratch being most difficult to cure. This cutting down does not require much pressure in working; a circular movement effects the object in the most even manner, and a light even pressure only—just sufficient to feel that the pumice is doing its work. The panel must be kept wet, and the rubber dipped into the water and then into the pumice, then on to the work. If this is carefully done, the “nits,” or grit, will gradually disappear, and a level surface will be obtained. We shall now be able to judge whether the roughness proceeds from the undissolved gum, or from some foreign substance which has no business there. If it is from bits of varnish, then there will be a soft place where each of these pieces has been; but if it is real grit, then it is most likely there will be holes. The work should now stand for a few days, and then be rubbed down again, but with the finest pumice-stone that can be got, and this may be obtained by levigation, that is, by putting the ground pumice in, we will say, a basin, and stirring it up well. Let it stand for a few seconds for the coarser parts to sink to the bottom, and then pour the top part of it into another basin. If this is done two or three times it will be found that the pumice that settles in the last result will be almost as fine as flour. When the previously cut down surface is

hard, it must be again cut down with the levigated pumice, which will bring up a fine surface which may now be finished. But if the face is not quite satisfactory it will be better to give it another coat of varnish; in fact, coach-painters, as a rule, always give another coat of varnish at this stage, as it fills up any little inequalities and bare places, and if the varnish is carefully used, and a good flowing coat put upon it, it will be much easier to bring it up to a fine polish. The cork should be taken out of the varnish bottle the night before being used, and left out. This helps to give the varnish more body. The work must now be left to become thoroughly hard before anything else is done to it—a week, at least, or, if longer, the better. We must now take the levigated pumice and go very lightly over the surface, just sufficient to deaden or take off the gloss. In doing this we shall also remove any projections. This being done, the panel must be left to stand for a couple of days, at least, to harden. We now make up a “boss,” viz., a ball of cotton wool tied up in a piece of calico, and covered with one or two folds of old silk. This is used in the same manner as the felt, but with rottenstone and oil instead of the pumice, the circular movement being effective in this case also. Steady and careful rubbing will soon have its effect, and the surface will begin to lose its deadness, and the polish to take its place; but hurry and careless rubbing will spoil all. Unless the surface looks satisfactory, fine bread flour must be used, and the oil and rottenstone cleared off by its aid, using the ball of the hand alone for that purpose. The final polish must be brought up with the hand. In the left hand a damp washleather must be held wherewith to damp the hand while working, which is done in this way, viz.: Damp the hand, then draw it along the surface in a quick sort of motion, with a certain amount of pressure. Of course it will require some experience to do this properly, but with care and watchfulness it may be soon acquired. This drawing of the hand on the varnish will make a slight squeaking noise, which is a good sign, as it tells us we are on the right path.

TRANSPARENT LETTERS ON IMITATION FROSTED GLASS.

A simple and cleanly method is to first rub over the outside of the square with a little whiting and water, and set out the letters by marking the lines and letters with a pencil stick on the whiting as a guide; then outline the letters in black, brown, or gold; when this is dry and hard the frosting may be done with ordinary white lead, finely ground, with a little varnish in, and whilst it is wet wipe off the inside of the outline; this makes a sharp, clean, and readable job. Another method by which the effect is sometimes gained is to use paper letters, slightly gummed on one side, wetted, and placed in the position on the glass they are to occupy, being previously set out upon paper, or on the above method, as a guide to place the paper letters. When the whole of the letters are placed and dry, the frosting may be done, going over the paper letters as well as the other parts. The frosting should be allowed to dry quite hard. When this is the case, we take a damp sponge and wet the back of the letter, the water will penetrate the paper and soften the gum, and the letters will peel off the glass, and leave the letters sharp and clean cut. Another plan is to cut a stencil of the letters out of ordinary cartridge paper—the thin paper is best—then frost the window all over, and let it get nearly dry; we then place the stencil upon the frosting, and secure it at the sides all round; we then carefully use a stencil brush, and, holding the paper flat to the glass with one hand, brush out, with a rotary motion, the frosting from the letters through the openings in the stencil paper. This method requires very great care to be used, or else the paper will

break up the frosting; for this and other reasons we prefer to use the outline method of doing the work, as it is in the end the quickest and best. But if the square of glass can be taken out of its place to be done, or another clear square be used and glazed in against the one already in the window, then we would recommend that the white acid should be used as described in our articles on embossing on glass. The letters should be written in Brunswick Black, and the glass laid flat when the black is dry; the square walled round with the walling wax or Russian tallow, and the white acid applied, which will obscure or frost the glass everywhere but where the Brunswick Black is, and when the acid has done its work it is poured back into the gutt. percha bottle for further use, and then the black washed off with turps, and the glass well washed with soap and water. The result, if properly done, will leave the letters all clear glass, and the rest of the surface a dead white matt, an exact imitation of ground glass. There can be no question but this is the best method of doing such work, as it is a permanent job, while the other methods are but makeshifts.

PAINTING AND LETTURING ON SILK

In painting and gilding on silk it is necessary to keep the fabric clean on all parts not covered by the letters or painting; therefore, it is in all cases best to draw the letters or design on lining paper, lay it flat on the silk, and trace or pounce it, having in the former case rubbed the back of the design with French chalk if the silk is dark in colour; but if it is light-coloured silk or satin, then we must use Indian red or any other dark colour. If a pounce is used it will of course be first pounced, when the design is complete on the silk, it must be laid in with a thin distemper colour. Chinese white is the best, and if a little glycerine is added there will be no danger of the work cracking. A little isinglass or parchment size may be added with advantage, as it will help to form a non-absorbent surface for the gold size to be put on without its sinking into the fabric and thus prevent the colour spreading. Great care must, however, be exercised that the distemper colour is not too thick or too strong. In fact, the paint on silk must be laid on sparingly in order to prevent its running or cracking. If a picture or coat of arms is to be done upon the silk, then the whole space which it will cover must be covered with the distemper colour, keeping strictly to the outline, of course. Gilding is done in the ordinary way, with either oil gold size, or japanner's, but the oil is the best. If we are painting a picture on silk or satin which is not to be exposed to the weather but framed and put under glass, we may proceed with the painting without any preparation being used. If in oil colour, it must be used very dry, just as they leave the tube; this helps to prevent the colour spreading, which it would if the colour was used thin or oily. If the tube colour is too thin in itself as it leaves the tube, it may be made all right by putting it upon a piece of blotting paper, or brown paper, which absorbs the oil, and thus makes it workable.

Turpentine may be used with the oil, but only just sufficient to render it workable. In this case, however, it is a good plan to give the part to be painted in oil a coat of the isinglass and glycerine size before beginning. In painting in water colour alone, on silk or satin, the outline is traced or pounced as before; then it is filled in with a coating of Chinese white and glycerine to prevent it cracking. Upon this water colours may be manipulated with ease. Chinese white must be used for all body colours, and afterwards glazing in the usual manner. A medium is sold by the artists' colourmen called "Water-colour Megilp"; this acts on water colours as the ordinary megilp acts on oil colours, and enables us to blend and graduate the colours with greater ease.

GILDING LETTERS ON MARBLE

In gilding sunk letters on white marble tablets, the gold size will not run or stain the marble if it is polished, as is usually the case; but if it is not polished, then it will be best to give the work a weak coat of size to prevent the staining. In gilding sunk letters, they may—if not in the open graveyard—be gilt with the tip and cushion, which is the best and cheapest way; but if this is not practicable, then they must be gilt from the transferred gold, which may be obtained ready transferred at any gold beater's. This is by far the best and cheapest plan. In cutting the leaf we must exercise our judgment: it should be cut as near the size required as possible, so that there will be little waste, and the pieces will be laid down with greater ease.

STENCILLING ON GLASS

It is not possible to get the edges as sharp with the stencil brush as with the pencil, that is understood by all professional men; but, with care, very good work can be done. It is better to use the brush comparatively dry, and go over the work twice: as by doing so we make a much better job than with once doing; care and patience is all that is required. We have found it always the best plan to work only with the materials we *know* will answer the purpose intended, and not to be wasting our time running after thus or that nostrum.

SETTING OUT LETTERS ON GRANITE

Give the polished granite a coat of size and whiting, and, when it is dry, mark out the letters on that. Or mark out the letters on thin paper, and paste the paper on to the stone, and then cut the letters. Both of these will wash off with water when done with. As regards the gilding of the cut, or sunk letters, they must be sized and gilt in the ordinary way, as described above.

LETTURING COFFIN PLATES.

Crush some good pipeclay into a very fine powder and make a pounce bag with it, and then dust the polished surface of the plate with it; we may then sketch the letter and write upon it. The dust will brush off, or may be washed off when the letters are dry.



E SIGN-WRITER AND GLASS EMBOSSESS.



ARMS OF THE TRADE COMPANIES.

1
STATIONERS.



MOTTO: VERBUM DOMINI MANIPULUS EST VITAE
 ARMS: A shield divided into four quarters. The top quarter contains a sunburst. The bottom quarter contains a book. The two side quarters each contain a quill pen. The shield is surrounded by a decorative border of leaves and flowers.

4
CLOTHWORKERS.



MOTTO: VERBUM DOMINI MANIPULUS EST VITAE
 ARMS: A shield divided into four quarters. The top quarter contains a lion. The bottom quarter contains a unicorn. The two side quarters each contain a crown. The shield is surrounded by a decorative border of leaves and flowers.

7
MASONS (London).



MOTTO: VERBUM DOMINI MANIPULUS EST VITAE
 ARMS: A shield divided into four quarters. The top quarter contains a castle tower. The bottom quarter contains a lion. The two side quarters each contain a unicorn. The shield is surrounded by a decorative border of leaves and flowers.

2
BREWERS.



MOTTO: VERBUM DOMINI MANIPULUS EST VITAE
 ARMS: A shield divided into four quarters. The top quarter contains a lion. The bottom quarter contains a unicorn. The two side quarters each contain a crown. The shield is surrounded by a decorative border of leaves and flowers.

5
TALLOW CHANDLERS.



MOTTO: VERBUM DOMINI MANIPULUS EST VITAE
 ARMS: A shield divided into four quarters. The top quarter contains a lion. The bottom quarter contains a unicorn. The two side quarters each contain a crown. The shield is surrounded by a decorative border of leaves and flowers.

BLACKSMITHS.



MOTTO: VERBUM DOMINI MANIPULUS EST VITAE
 ARMS: A shield divided into four quarters. The top quarter contains a lion. The bottom quarter contains a unicorn. The two side quarters each contain a crown. The shield is surrounded by a decorative border of leaves and flowers.

3
IRONMONGERS.



MOTTO: VERBUM DOMINI MANIPULUS EST VITAE
 ARMS: A shield divided into four quarters. The top quarter contains a lion. The bottom quarter contains a unicorn. The two side quarters each contain a crown. The shield is surrounded by a decorative border of leaves and flowers.

6
FISHMONGERS.



MOTTO: VERBUM DOMINI MANIPULUS EST VITAE
 ARMS: A shield divided into four quarters. The top quarter contains a lion. The bottom quarter contains a unicorn. The two side quarters each contain a crown. The shield is surrounded by a decorative border of leaves and flowers.

9
GUN-SMITHS



MOTTO: VERBUM DOMINI MANIPULUS EST VITAE
 ARMS: A shield divided into four quarters. The top quarter contains a lion. The bottom quarter contains a unicorn. The two side quarters each contain a crown. The shield is surrounded by a decorative border of leaves and flowers.

ARMS OF THE TRADE COMPANIES.

10
HABERDASHERS.

MOTTO: *SPES BONA*
 ARMS: A shield quarterly, the first and third quarters argent, the second and fourth quarters gules, on a diagonal band from the chief to the base, a cross gules, on a chief, a hand holding a sword.
 CREST: On a wreath, a hand holding a sword.
 SUPPORTERS: Two horses.

11
SPECTACLE
MAKERS.

ARMS: A shield quarterly, the first and third quarters argent, the second and fourth quarters gules, on a diagonal band from the chief to the base, a cross gules, on a chief, a hand holding a pair of spectacles.

12
GOLDSMITHS.

MOTTO: *JUSTITIA VINCIT VIOLENTIAM*
 ARMS: Quarterly, the first and third quarters argent, the second and fourth quarters gules, on a diagonal band from the chief to the base, a cross gules, on a chief, a hand holding a sword.
 CREST: On a wreath, a hand holding a sword.
 SUPPORTERS: Two horses.

14
BRICKLAYERS AND
TYLERS.

MOTTO: *IN COLORE*
 ARMS: A shield quarterly, the first and third quarters argent, the second and fourth quarters gules, on a diagonal band from the chief to the base, a cross gules, on a chief, a hand holding a sword.
 CREST: On a wreath, a hand holding a sword.

15
PLASTERERS.

MOTTO: *LABOR OMNIA VINCIT*
 ARMS: A shield quarterly, the first and third quarters argent, the second and fourth quarters gules, on a diagonal band from the chief to the base, a cross gules, on a chief, a hand holding a sword.
 CREST: On a wreath, a hand holding a sword.
 SUPPORTERS: Two horses.

16
CURRIERS.

MOTTO: *SPES BONA*
 ARMS: A shield quarterly, the first and third quarters argent, the second and fourth quarters gules, on a diagonal band from the chief to the base, a cross gules, on a chief, a hand holding a sword.
 CREST: On a wreath, a hand holding a sword.
 SUPPORTERS: Two horses.

17
PATTEN MAKERS.

MOTTO: *SPES BONA*
 ARMS: A shield quarterly, the first and third quarters argent, the second and fourth quarters gules, on a diagonal band from the chief to the base, a cross gules, on a chief, a hand holding a sword.
 CREST: On a wreath, a hand holding a sword.

18
POULTERERS.

ARMS: A shield quarterly, the first and third quarters argent, the second and fourth quarters gules, on a diagonal band from the chief to the base, a cross gules, on a chief, a hand holding a sword.
 CREST: On a wreath, a hand holding a sword.
 SUPPORTERS: Two horses.

ARMS OF THE TRADE COMPANIES.

19 NEEDLE MAKERS.



ARMS. Vert three need. on a tree at each ducally crowned or
Crest. A man on the dexter and a woman on the sinister
SUPPORTERS. A man on the dexter and a woman on the sinister
MOTTO. These supporters are commonly called Adam and Eve.

20 CORDWAINERS OR SHOEMAKERS.



ARMS. As a cordon or between two
Crest. On a wreath a goat's head erased
SUPPORTERS. Two goats on the dexter and sinister

21 FRAMEWORK KNITTERS.



MOTTO. SPEED, STRENGTH, AND TRUTH UNITED
ARMS. As a knitting frame as garnished or with work pendant
Crest. A woman on the dexter and a man on the sinister
SUPPORTERS. The dexter a woman and the sinister a man

22 SADLERS.



MOTTO. C. A. T. R. A. S. T. S. Y. Y.
ARMS. As a horse and a saddle
Crest. On a wreath a horse's head
SUPPORTERS. Two horses on the dexter and sinister

23 MUSICIANS (London).



MOTTO. HARMONY
ARMS. As a lyre with a crown
Crest. On a wreath a lyre

24 GOLD AND SILVER WIRE- DRAWERS.



MOTTO. AN. IT. AM. B. A. Y. A. Y. A. Y. A. Y.
ARMS. As a wire-drawing machine
Crest. A woman on the dexter and a man on the sinister
SUPPORTERS. The dexter a woman and the sinister a man

25 DISTILLERS.



MOTTO. A. R. O. P. A. N. A. N. A. N. A. N. A. N. A. N.
ARMS. As a sun and a distillation apparatus
Crest. On a wreath a sun
SUPPORTERS. A man on the dexter and a woman on the sinister

26 FAN MAKERS OR FANSTICK MAKERS.



MOTTO. ARTS AND TRADES UNITED
ARMS. As a fan and a fanstick
Crest. On a wreath a fan

27 GLAZIERS.



MOTTO. I. A. V. O. U. S. I. C. E. N. D. O. R. A.
ARMS. As a window and a pane of glass
Crest. On a wreath a window

ARMS OF THE TRADE COMPANIES.

28
WATERMAN'S COMPANY.

MOTTO: AT THE HAND OF OUR SUPERIORS.
 ARMS: Blue and silver, with a fountain pen and a quill in the center of the shield, supported by two fish.
 CREST: A wreath of laurel and oak leaves, with a fountain pen and a quill in the center.
 SUPPORTERS: Two fish, one on each side of the shield.

29
CARPENTERS.

MOTTO: ARI ET VERITAS.
 ARMS: A shield with a cross and a wreath, supported by two lions.

30
APOTHECARIES.

MOTTO: QUIDEM ET PER QUIDEM INCOR.
 I AM CALLED AN ASSISTANT THRO' ON THE MIND.
 ARMS: A shield with a caduceus and a wreath, supported by two horses.
 CREST: On a wreath of laurel and oak leaves, a caduceus.
 SUPPORTERS: Two horses, one on each side of the shield.

31
GROOERS.

MOTTO: ARI ET VERITAS.
 ARMS: A shield with a crown and a wreath, supported by two lions.
 CREST: A helmet and a wreath of laurel and oak leaves.
 SUPPORTERS: Two lions, one on each side of the shield.

32
LORINERS OR BIT-
MAKERS (London).

MOTTO: ARI ET VERITAS.
 ARMS: A shield with a cross and a wreath, supported by two lions.

33
FARRIERS.

MOTTO: ARI ET VERITAS.
 ARMS: A shield with a cross and a wreath, supported by two horses.
 CREST: On a wreath of laurel and oak leaves, a cross.
 SUPPORTERS: Two horses, one on each side of the shield.

34
CUTLERS.

MOTTO: ARI ET VERITAS.
 ARMS: A shield with a cross and a wreath, supported by two lions.
 CREST: A helmet and a wreath of laurel and oak leaves.
 SUPPORTERS: Two lions, one on each side of the shield.

35
FELT MAKERS.

MOTTO: ARI ET VERITAS.
 ARMS: A shield with a cross and a wreath, supported by two lions.
 CREST: A helmet and a wreath of laurel and oak leaves.
 SUPPORTERS: Two lions, one on each side of the shield.

36
LEATHER SELLERS (London).

MOTTO: ARI ET VERITAS.
 ARMS: A shield with a cross and a wreath, supported by two horses.
 CREST: On a wreath of laurel and oak leaves, a cross.
 SUPPORTERS: Two horses, one on each side of the shield.

ARMS OF THE TRADE COMPANIES.

37
GARDENERS.



MOTTO IN THE SOIL OF THE EARTH SHALL
THEY EAT THE FRUIT

ARMS The shield is divided into three parts. The upper part is a landscape with a tree and a house. The lower part is a field with a plow. The crest is a wreath of flowers and leaves. The motto is 'IN THE SOIL OF THE EARTH SHALL THEY EAT THE FRUIT'.

38
WOOLMEN OR
WOOL-PACKERS.



ARMS A shield with a wool pack.

39
SCRIVENERS.



MOTTO LITERA SCRIPTA MANET

ARMS A shield with a quill pen. The crest is a wreath of flowers and leaves. The motto is 'LITERA SCRIPTA MANET'.

40
CLOCK MAKERS.



MOTTO TIME IS THE BULWARK OF AFFAIRS

ARMS A shield with a clock face. The crest is a wreath of flowers and leaves. The motto is 'TIME IS THE BULWARK OF AFFAIRS'.

41
PLUMBERS.



MOTTO IN THE HAND IS ALL OF THE TRADE

ARMS A shield with a plumb line. The crest is a wreath of flowers and leaves. The motto is 'IN THE HAND IS ALL OF THE TRADE'.

42
MERCHANT TAYLORS.



MOTTO IN THE HAND IS ALL OF THE TRADE

ARMS A shield with a lion. The crest is a wreath of flowers and leaves. The motto is 'IN THE HAND IS ALL OF THE TRADE'.

43
COACH MAKERS AND COACH-
HARNESS MAKERS.



MOTTO SINE FINE NON HABET

ARMS A shield with a coach. The crest is a wreath of flowers and leaves. The motto is 'SINE FINE NON HABET'.

44
HORNERS.



ARMS A shield with a horn. The crest is a wreath of flowers and leaves. The motto is 'SINE FINE NON HABET'.

45
JOINERS (London).



MOTTO JOINERS TO THE WORLD

ARMS A shield with a joiner's tool. The crest is a wreath of flowers and leaves. The motto is 'JOINERS TO THE WORLD'.

ARMS OF THE TRADE COMPANIES.

46
CARD MAKERS.

MOTTO: CUI RECTO ELITE VITIS

ARMS. On a cross between the four quarters proper a crown of thorns and a banner of the word of the Lord.

CREST. On a wreath a golden eagle with spread wings.

SUPPORTERS. Two lions passant guardant.

47
SHIPWRIGHTS.

MOTTO: WITHIN THE ARK, SAFE FOREVER

ARMS. A ship on the sea, the stern terminating with the head of a dragon. The ship is the ark with three masts and a flag on the mainmast.

CREST. On a wreath a keel or the ground on which the ship is built.

48
TINPLATE WORKERS.

MOTTO: AMONG CITIES UNITI

ARMS. On a chevron or between two towers the two lights of a glass.

CREST. On a wreath a golden sun.

SUPPORTERS. Two workers in armor.

49
BUTCHERS.

MOTTO: MIA S BUE TIBI S MELLIS VES IT BO ES

ARMS. A shield with a cross and a lamb.

CREST. On a wreath a golden lamb.

SUPPORTERS. Two winged lions.

50
FRUITERERS.

MOTTO: ARBOR FRUCTUS ET VITAE

ARMS. A shield with a tree.

CREST. On a wreath a golden tree.

51
BRAZIERS.

ARMS. On a chevron or between two towers the two lights of a glass.

CREST. On a wreath a golden sun.

SUPPORTERS. Two workers in armor.

52
BRODERERS.

MOTTO: OMNIA SUPER

ARMS. A shield with a cross and a lamb.

CREST. On a wreath a golden lamb.

SUPPORTERS. Two winged lions.

53
BAKERS.

ARMS. A shield with a balance scale.

CREST. On a wreath a golden balance scale.

54
WHEELWRIGHTS.

MOTTO: FIDELI SERVITI

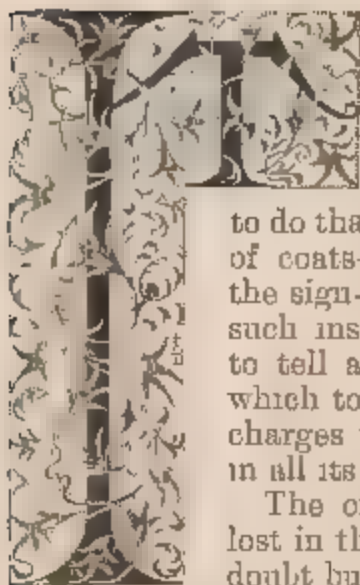
ARMS. A shield with a wheel.

CREST. On a wreath a golden wheel.

SUPPORTERS. Two workers in armor.



THE SCIENCE OF HERALDRY



WILL be evident that, in a work of this kind, much as we would like to, we cannot give a thorough exposition of the science of heraldry. It would take volumes to do that. But in view of the large numbers of coats of arms we publish for the use of the sign-writer, &c., &c., we propose to give such instruction as will enable our readers to tell at a glance the right colours with which to blazon each of the quarterings and charges which constitute an heraldic shield in all its splendour.

The origin of the science of heraldry is lost in the mist of ages, but there can be no doubt but that it was originally instituted in order to distinguish one person from another,

and to do honour to particular persons. Kings and rulers were the grantors of these honours, and in the early days warriors were the recipients of these distinctions, bestowed for some brave and noble action or deed, but often given to vile favourites also, too many examples of which disgrace the earlier annals of our own land; but no doubt these were the exceptions, and the better use of these honours the rule.

Although the science is not held in such esteem as formerly, those who are enabled to wear coat armour are as proud of the distinction as ever their forefathers who won them could possibly be; and justly so. At a very early date corporate towns and cities and trade corporations assumed distinguishing emblems to mark their individuality. The municipal bodies charged their shield with some emblem which had a local meaning, and the trade corporations adopted some emblem of their trade, or the merchandise they dealt in, which became the sign and token of that body. Private individuals, as we have before said, adopted emblems which gave some indication of the deed or action by which the distinction was acquired, and by intermarriage with other families so entitled, added their wives' quarterings and charges to their own, and thus the shield became covered with emblems, and was cut up into a great number of parts (called quarterings), upon which the emblems were blazoned.

The shield or escutcheon upon which the charges are blazoned is one of the most ancient signs of heraldry. Its use as a protection to the wearer in battle in shielding the body from hostile weapons marked it out specially as the place to put any distinguishing badge, and thence it became in heraldry the surface upon which the various honourable marks were painted or engraved. Shields are of different shapes; but those we give comprise the most important.

As we stand opposite a shield, the *SINISTER* side is that which is opposite our *right hand*, and the *DEXTER* side opposite our *left hand*.

Engraved lines and dots enable us, when viewing an engraved coat of arms, to tell at once what colour each part should be coloured.

Furs are also used in heraldry.

Ermine, represented in black and white spots, white upon black, and black upon white.

Ermines (pean) is black upon gold and gold upon black, the shield in both cases being divided perpendicularly. Another fur is Vair, a peculiar arrangement of a bell like form, its shape being so arranged that it is right with the mouth of the bell, either up or down.

The word *PROPER* denotes the natural colours of the animal or thing represented.

Per PROPER. Whenever we see any of the charges on crests of a coat of arms, without either dots or lines, that indicates that the animal, or thing, shall be painted in its natural colour and form.

We might extend this chapter indefinitely, but, as by referring to our descriptions and examining any engraved coat of arms, a correct reading of the colours may be obtained, we think that it is all our readers require.

It would be excellent practice for our students to take Plate XXIII., the Royal Arms in colour, and convert it into black and white, expressing the various colours in the tinctures set out in this chapter on Heraldic terms.

HERALDIC TERMS.

TINCTURES.

The colours upon shields in heraldic language are called *tinctures*; gold (*Or*) is represented by minute dots all over the surface; silver (*Argent*) is white. In painting, yellow paint may represent gold; and white, silver.

- No. 1. *Or* shield, covered with minute dots
- No. 2. *Argent* (white), silver. No shield shown.
- No. 3. *Azure* (blue), shown by lines drawn horizontally across the shield
- No. 4. *Vert* (green), is shown by lines drawn diagonally from the dexter (left hand) down to the sinister base.
- No. 5. *Gules* (red), represented by vertical or perpendicular lines from top to bottom of shield.
- No. 6. *Sable* (black), shown by horizontal and perpendicular lines crossing each other
- No. 7. *Tenne* or Tawney (orange). This colour is shown by diagonal lines drawn from the sinister side of the shield to the dexter, and traversed by horizontal lines crossing
- No. 8. *Sanguine* (dark red or murrey colour), represented by lines crossing each other diagonally from the sinister to the dexter side of the shield, and from the dexter to the sinister side.
- No. 9. *Purpure* (purple) is represented by lines drawn from the sinister side of the shield down to the right base.

FORMS

- No. 10. *A Bezant*, or (gold), a Turkish coin or medal.
 - No. 11. *Tourteau* (gules, red), this was symbolical of a drop of blood on the shield.
 - No. 12. *The Golpe* (purple), a medicine ball.
 - No. 13. *The Pellet* (sable, black) is supposed to represent a ball of lead discharged from a catapult.
 - No. 14. *The Orange*.
 - No. 15. *The Guze* (sanguine, murrey colour), representing the discharge of red hot shot.
 - No. 16. *The Fountain* is barry wavy of six, argent, and azure (white and blue), and represents water.
- We now come to what are called *Guttes*, or drops, of which there are six.
- No. 17. *Gutte-de-Or*, which is the only one, bearing the name of a metal, in allusion to the ingots of gold paid for the ransom of captive knights.
 - No. 18. *Gutte-de-Sang*, the drops of blood.
 - No. 19. *Gutte-de-Larmes*, azure (blue), the tear-drop.
 - No. 20. *Gutte-de-Huile*, Olive, the drop of oil (vert-green), used for flesh wounds
 - No. 21. *Gutte-de-Poir*, the drop of pitch, sable representing boiling pitch being poured from the ramparts on to the besiegers.

THE SIGN-WRITER AND GLASS EMBOSSE



DIVISIONS OF THE SHIELD.

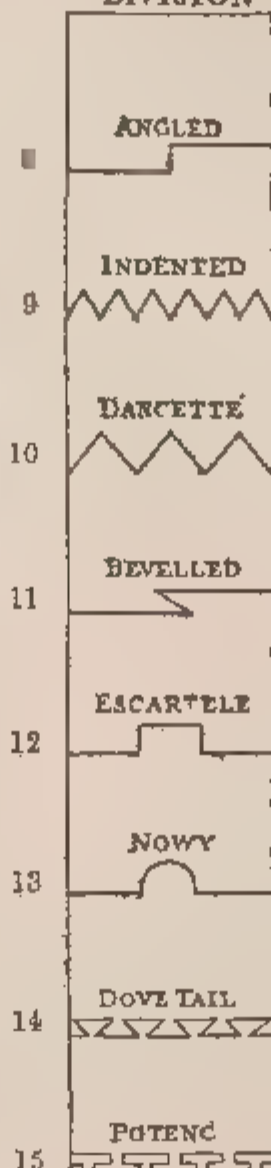
DIVISIONS OF THE SHIELD.

- No. 22. Per pale, Shield divided perpendicularly from top to base
 No. 23. Quarterly
 No. 24. Per Bend
 No. 25. Per Bend Sinister.
 No. 26. Per Saltire
 No. 27. Per Pale, and Chevron.
 No. 28. Chequé
 No. 29. Lozengé
 No. 30. The pale, Gules, a pale, or.
 No. 31. The bend, ermine a bend azure
 No. 32. The bend, sinister, or, a bend sable
 No. 33. The chevron, Argent, a chevron, Gules
 No. 34. The chief, or, a chief sable.
 No. 35. Per pale, azure, indented, argent, and a pale countercharged.
 No. 36. Gules, a fess, engrailed, surmounted by a pale, engrailed, ermine.
 No. 37. Azure, a saltire, argent, surmounted by a pale gules.
 No. 38. The pallet, azure, two pallets, argent.
 No. 39. Azure, three pallets, wavy, argent.
 No. 40. Vert, a pale, or, between two endorers, argent
 No. 41. Paly, per fess, sable, and argent, a pale, countercharged.
 No. 42. Paly of six, or, and gules.
 No. 43. Paly of eight, sable, and argent
 No. 44. Paly of ten, argent, and vert.
 No. 45. Paly of six, or, and sable, per fess, countercharged.
 No. 46. Ermine, a cross, gules.
 No. 47. Quarterly, argent and gules, a cross engrailed, countercharged.
 No. 48. Gules, five Bezants, crossways, or.
 No. 49. Or, two bendlets, gules
 No. 50. Bendy of six, argent, and azure.
 No. 51. Sable, three cross, crosslets bendways argent
 No. 52. Per pale, or, and sable, a saltire.
 No. 53. Azure, a saltire, humette, or
 No. 54. Azure, a bend engrailed, cot tised argent
 No. 55. Per pale, or, and azure, a chevron, countercharged
 No. 56. Or, a fess, between two chevrons gules
 No. 57. Vert, a chevron between two chevrons, argent
 No. 58. Or, three chevronels, gules.
 No. 59. Chevronnes of six, or, and sable
 No. 60. Argent, a heart, supported by two swords, chevronways, proper

LINES of DIVISION



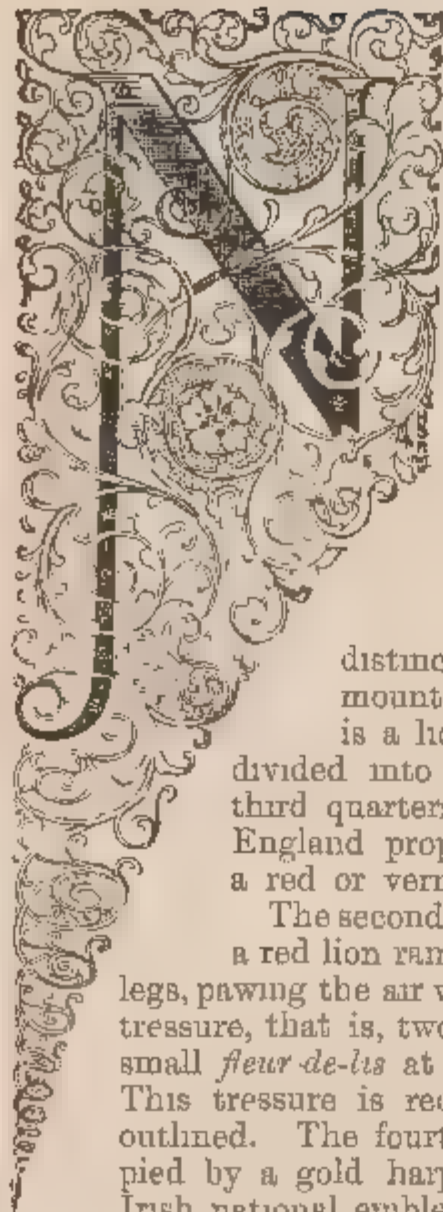
LINES of DIVISION



- No. 61. Gules, a chevron, humette, or.
 No. 62. Argent, a chief, per pale, azure, and gules.
 No. 63. Azure, three mullets, in chief, argent.
 No. 64. Or, a Bordure, purple.
 No. 65. Argent, an Inescutcheon, within an orle of martlets, sable.
 No. 66. An Orle, azure.
 No. 67. Sanguine, a bordure, argent, with verdoy trefails, slipped proper.
 No. 68. Argent, three piles, meeting in base, gules.
 No. 69. Ermine, two piles, issuing from the dexter, and sinister, sides, and meeting in base, azure
 No. 70. Or, a pile, between two others reversed, sable
 No. 71. Sable, three piles in bend, each point ensigned with a fleur-de-ls, argent.
 No. 72. Sable, three castles, argent
 No. 73. Argent, in chief, two catherine wheels, azure, and in base a chaplet of roses, proper
 No. 74. Vert, in chief, two chess rooks, in base a child's head, coupé below the shoulders, tied round the neck with a snake, proper.
 No. 75. Gules, a crescent, argent
 No. 76. Vert, three crescents, conjoined, argent.
 No. 77. Or, in chief, on the dexter side, a cross avellane. On the sinister side a cross boutonne, azure, in base a cross calvary, sable
 No. 78. Sable, three cross crosslets, Argent, two in chief, and one in base.
 No. 79. Argent, an anchor, sable
 No. 80. Or, two single arches, in chief, and a double arch, in base, azure
 No. 81. Or, a cubitt arm vested, cuffed argent, the hand proper, grasping a baton, sable, tipped of the third
 No. 82. Vert, an arm embowed, and erased, in the hand a club, proper.
 No. 83. Ermine, a canton, purple.
 No. 84. Azure, fretté, and semme, of fleur de ls, or
 No. 85. Gules, fretté, argent
 No. 86. Argent, semme of cross crosslets, sable, a demi lion, proper
 No. 87. Sable, a fretté, argent
 No. 88. Or, a fretté crossed, sable
 No. 89. Argent, a cross moline, vert
 No. 90. Sable, in chief, a cross patée, in base, a cross, fitchey, argent
 No. 91. Or, a cross fleury, Azure.
 No. 92. Argent, a cross potent, sable.
 No. 93. Argent, a dragon, vert.



THE ROYAL ARMS.



Shield divided into quarters.

The Garter ribbon

Supporters

Scroll underneath

Painting the arms

NOT even the youngest of our readers but what is familiar with the Royal Arms. "The Lion and the Unicorn fighting for the Crown" is one of the earliest learnt legends of our youth, and the interest then awakened never flags in the breast of a true decorator. The Royal Arms of Great Britain and Ireland, which combine those of England, Scotland, and Ireland, consist of a shield surrounded by the ribbon of the Most Noble Order of the Garter, one of the most, if not the most, valued social

distinction in Europe. The shield is surmounted by a royal crown, upon which is a lion, also crowned. The shield is

divided into four equal parts—the first and third quarters are blazoned with the arms of England proper, viz., three golden lions on a red or vermillion ground.

The second quarter of the shield (Scotland) is a red lion rampant, that is, standing on its hind legs, pawing the air with its fore legs, surrounded by a tressure, that is, two lines a little way apart, having small *flour-de-lis* at each corner, and on the sides. This tressure is red also; the ground being gold outlined. The fourth quarter of the shield is occupied by a gold harp on a blue ground, being the Irish national emblem. Round the shield is placed a blue ribbon with gold edges, upon which is displayed the motto of the Order of the Garter, *Honi soit qui mal y pense*.

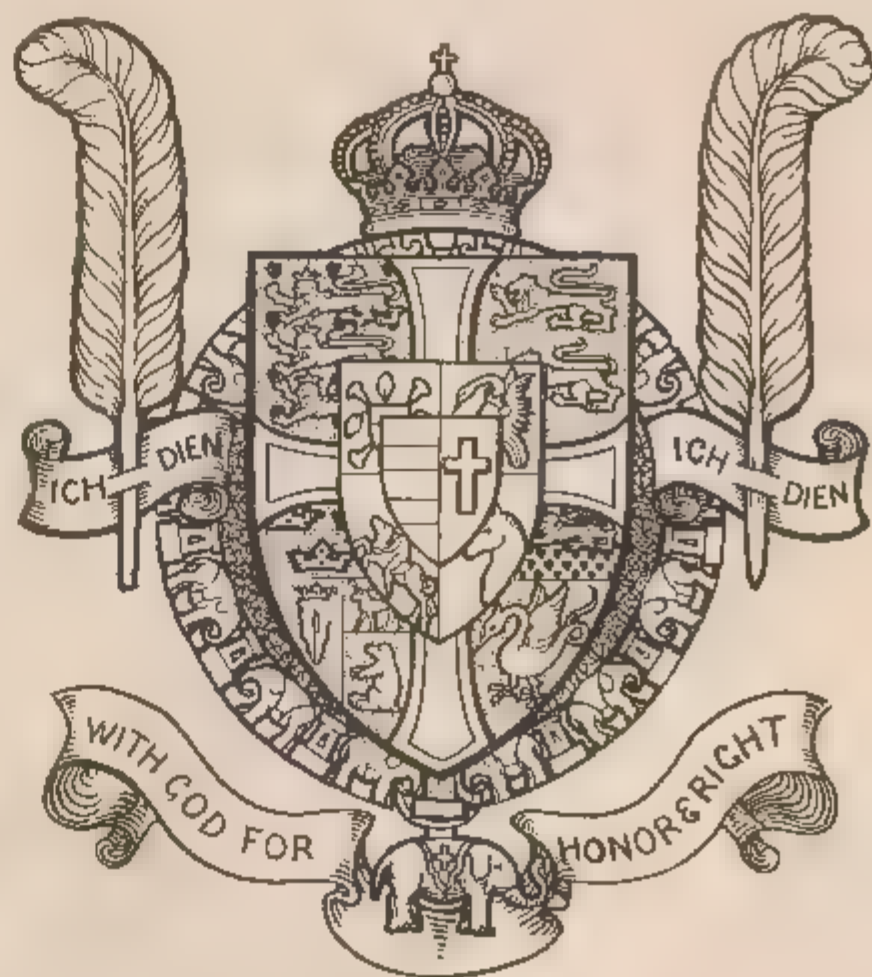
Each side of the shield is supported by a lion and a unicorn; the lion to the left, as we look at the shield, and the unicorn to the right. The unicorn has a gilt horn springing from out of his forehead; round his neck is a collar of gold, to which a gold chain is fastened, overlapping his body, and secured below. The lion is painted proper, that is, in natural colours. The unicorn is white (Argent), with gold (Or) hoofs, and the tip or tuft of hair at the end of his tail is also gilt. Underneath the shield are scroll ornaments upon which the feet or claws of the animals rest, and upon which also a ribbon is hung. Upon the ribbon is the motto, *Dieu et mon Droit*. This ribbon is blue, but generally of a lighter colour than the blue of the garter round the shield. The letters on both should be in gold, outlined with black. Underneath the shield, and springing from the scroll ornament, are conventional representations of the rose, the thistle, and the shamrock—national emblems of the three kingdoms. In painting this, or in fact any heraldic emblem, every part of the work is outlined with black and shaded, more or less. The gold is best shaded with burnt sienna, with a little burnt umber added; and the white parts with vandyke brown and ultramarine blue, or with blue black alone; the reds and blues with purple lake, or burnt umber and crimson lake. It must be understood that the colours of coats of arms are fixed, and therefore there can be no departure from them, or we create false heraldry. The supporters may be placed in a variety of attitudes at the discretion of the artist, or to suit the exigencies of the space. The coloured example on Plate XXIII., and the varieties inserted in this text; also the examples given on Plate XIX., will disclose how great a latitude is permitted.

We now proceed to describe the arms of the Prince and Princess of Wales.



A.

ARMS OF H.R.H. THE PRINCE OF WALES
WITH THE ARMS OF SAXONY IN PRETENCE



B.

ARMS OF H.R.H. THE PRINCESS OF WALES

Her Royal Highness carries the Arms of the Royal Family of Denmark, without any difference.

ARMS OF THE PRINCE AND PRINCESS OF WALES.

Titles of
H R H
Prince of
Wales

The following are the titles borne by the Prince of Wales. He is Prince of Wales, a Knight of the Garter, Duke of Cornwall, and Earl of Chester, in England; Duke of Rothesay, Earl of Carrick, Baron Renfrew, and Lord of the Isles, in Scotland; Earl of Dublin, in Ireland; and by



C.

ARMS OF H.R.H. THE PRINCE OF WALES
WITH THE ARMS OF DENMARK IMPALED

right of his father, Prince of Saxony, and Duke of Saxe-Coburg Gotha. His Royal Highness is also a Knight of the Most Exalted Order of the Star of India, and of some foreign Orders of Knighthood.

As Prince of Wales, His Royal Highness bears the shield of his mother (as Queen of England), differenced with a silver label of three points, as the Princes of Wales, his predecessors from the time of the Black Prince (who was the first English Prince of Wales by creation), have borne the royal arms with the same difference. Accordingly the arms of the Prince of Wales are quarterly, first and fourth, England; second, Scotland, and third, Ireland; the label being in chief (*i.e.*, on top part of shield), and extending across the entire width of the shield. Upon this shield that of Saxony is now charged in pretence, as in the dexter of our engraving (C). The arms of Saxony here shown are, *barry, or, and sable, over all a bend treflee, vert*, which, rendered into plain English, is a wreath of Rue leaves, proper (*i.e.*, in natural colour).

In our example C we have given a representation of the impaled shield of the Prince and Princess of Wales. The dexter half of the shield (*i.e.*, the side opposite our left hand as we stand facing it) displays, as has already been stated, the arms of the Prince of Wales, as Prince of Wales charged in pretence with his shield of Saxony. In the sinister half appear the arms of Denmark alone, without any *quarterings*, that is, *Or, semee of hearts, gules, three lions passant (i.e., moving) guardant, in pale, azure, crowned, or*; in plain language, upon a field of gold, strewn with red hearts, three blue lions, having golden crowns.

Our fourth example, marked D, displays the arms of the Prince of Wales quartering Saxony, and having

an escutcheon of pretence of four quarterings with an inescutcheon. These quarterings are thus blazoned: 1. The Dukedom of Cornwall—*Sable, bezantee (i.e., black with golden roundles)*. 2. The Earldom of Chester, *azure, three garbs, or (i.e., blue with three golden sheaves)*. 3. The Dukedom of Rothesay, Scotland, with a silver label, and, over all, the insignia of the Lord of the Isles, *argent on waves of the sea proper, a lymphad, sable, the flags and pendant, gules, white, a black galley, with red flags upon the sea*. This shield is encircled with the Garter of the Order charged with its motto. It will be understood that the Garter never surrounds the impaled shield of the Prince and Princess. The crest of the Prince is the crest of England, the lion being differenced with his Royal Highness's own label, and the same label differences the supporters (*i.e.*, lion and unicorn have the label on each of them); in all other respects they are the same as the Royal Arms of Her Majesty. The coronet of the Prince and Princess of Wales has the circlet ensigned with four cross pattees, and as many *fleur-de-lis*, and it is arched with a single arch only, as in our example A. Their Royal Highnesses bear the Feather Badge, the well-known cognisance of the Prince of Wales. The three ostrich feathers of this famous badge were first consigned with a princely coronet by Edward Tudor, Prince of Wales, son of Henry VIII., and Henry Stuart, eldest son of James I., established the arrangement of the feathers within the coronet as they have since been blazoned. A single ostrich feather, having a scroll with the motto *Ich Dien* (I serve) attached to a gull,



D.

ARMS OF H.R.H. THE PRINCE OF WALES
WITH DENMARK IN PRETENCE

may probably have been borne, after an early usage, by our Prince and Princess. Possibly our Prince of Wales may again assume amongst his armorial insignia, The Shield of Peace (as he significantly entitled it) borne by his illustrious predecessor the Black Prince. This shield is black, with three white ostrich feathers set singly, each feather having its quill piercing a small scroll, with the motto *Ich Dien*.

Arms of the
Prince

THE SIGN-WRITER AND GLASS EMBOSSEUR.

ARMS OF THE ROYAL HOUSES

WHO HAVE OCCUPIED THE ENGLISH THRONE FROM THE CONQUEST TO THE PRESENT TIME SHOWING
THE DEVELOPMENT AND VARIATIONS OF THE ARMS.



NORMAN. 1066—1135

WILLIAM I. 1066—1087
WILLIAM II. 1087—1100
HENRY I. 1100—1135



NORMAN. 1135—1154.

STEPHEN 1135—1154.



ANJOU. 1154—1227

HENRY II. 1154—1189
RICHARD I. 1189—1199
JOHN 1199—1216
HENRY III. 1216—1272
EDWARD I. 1272—1307
EDWARD II. 1307—1327



ANJOU. 1327—1399.

EDWARD III. 1327—1377
RICHARD II. 1377—1399.

LANCASTER.

HENRY IV. 1399—1413



LANCASTER 1422—1485

HENRY V. 1413—1422
HENRY VI. 1422—1461

YORK.

EDWARD IV. 1461—1483
EDWARD V. Reigned 11 weeks.
RICHARD III. 1483—1485

TUDOR.

HENRY VII. 1485—1509
HENRY VIII. 1509—1547 MARY I. 1553—1558
EDWARD VI. 1547—1553 ELIZABETH 1558—1603.



STUART. 1603—1688.

JAMES I. 1603—1625.
CHARLES I. 1625—1649.
CHARLES II. 1649—1685.
JAMES II. 1685—1688.



STUART AND ORANGE.

1687—1702.

WILLIAM AND MARY II. 1689—1694.
WILLIAM III. 1694—1702.



STUART. 1702—1714.

ANNE. 1702—1714



HANOVER.

GEORGE I. 1714—1727
GEORGE II. 1727—1760



HANOVER.

GEORGE III. 1760—1820.
GEORGE IV. 1820—1830.
WILLIAM IV. 1830—1837

THE ART OF VARNISH ENAMEL PAINTING
ON GLASS.

EAL stained glass is always to be preferred to any imitation, but the process of glass painting herein recorded is the sole invention of the author, and has proved itself very useful as a substitute for the stained and painted glass. The author does not pretend to offer or to place this method of glass painting in competition, or, indeed, as a substitute for what is known as stained and painted glass, but as a useful and valuable process especially adapted to domestic windows rather than

for church work. It has an advantage over all other painted glass, inasmuch as any number of colours may be put on one sheet of glass without the necessity for leads, and any description of designs from the simplest to the most elaborate may be executed with a correctness and finish equal to the vitrified glass. There is, of course, the same wide field for the display of the taste and skill of the artist as in the more expensive glass painting process, and the effect is the same. In this respect the process differs from every other imitation of stained glass, such as Potchomanie, Vitre-mane, Glacier process, &c., &c. We do not call our process an imitation of stained glass; we call it painted glass, which it really is in the fullest sense of the word, varnish or paint being alone used without any pretence of its being anything else, and although it looks in all but the lead work like stained glass, it cannot be called an imitation, but is, in itself, a separate and perfect system of painting on glass.

THE GLASS.

The fundamental principle of this system (in opposition to all previous practice) lies in the fact that the work is done upon ground glass instead of the smooth glass hitherto used. The roughness of the surface gives a key for the colour and varnish to lay hold of, which it does very firmly; the smooth glass does not hold the colour, and any painting upon it is liable to peel off and chip. The rough surface also enables us to spread the colours evenly, and so obtain effects impossible of attainment with smooth glass.

Ground glass when seen against the light appears white, with, in many cases, a grey or yellow tinge. This whiteness is of inestimable value in painting, and enables us to produce effects unattainable by any other method.

Beautiful designs may be worked out with the simplest combinations of colours, while, as will be seen, we do not claim for our system of glass painting that which it really is not, yet we place it before our readers as an admirable plan of ornamentation in lieu of the more expensive methods.

Having said all we need to say by way of introduction, we will now proceed to describe the practical working.

In order to facilitate the understanding of the process we will take a sheet of ground glass and go through the process from start to finish, but before doing so we will point out which colours and brushes will be required.

TOOLS *

1. Best badger hair softener, about 3s. 6d. a lb.
2. A few Camel hair flat tin tools of various sizes
3. A few Camel hair, swan and goose quill pencils.
4. A few Camel hair or sable writing pencils.
5. A soft sponge and a chamois or wash leather

COLOURS GROUND IN WATER

1. The best and finest ground raw Sienna.
2. The best Burnt Sienna
3. Best French Ultramarine blue.
4. Rose Madder
5. Brown Madder.

COLOURS GROUND IN OIL.

11. Burnt Umber.
12. Burnt Sienna.
13. Green oxide of chromium.
14. Carmine.
15. Any of the Brunswick greens.
16. Oxford Ochre.
17. Indian Red
18. Lamp black.
19. Purple lake

Many other colours may be used, but as is the case with some of those above enumerated, in small quantities only. The water colours are required for broad masses of colour, and the others for shading and rubbing, which will be duly explained in the working.

THE MIXING OF THE COLOURS

The colours used for this process should be as finely ground as possible. This is indispensable, for if the colour is coarse or any grit in it, or any other foreign matter, the work cannot be laid level and uniform in tint, but will appear muddy. Any outlay in this direction is more than compensated for by the smoothness of the working and the finer quality of the colours.

The principle involved in this system is based upon the thorough saturation of the water colours with the varnish while it is on the glass. This saturation produces a semi-transparency more or less clear according to the colour used, some colours, of course, being more transparent than others. Some of the colours require to be mixed with milk in order to bind them sufficiently to allow of the varnish being laid on without disturbing them, while others have a binding power in themselves and require nothing but water to fasten them. No glue or other size must be used, as these prevent the varnish from penetrating the colour and so spoil the work. French ultramarine is of a pulpy nature, and requires milk to bind it, but this must not be used in its full strength or it will spoil it. If it is of the best it will require no grinding, but simply mixing with milk and water in a basin, but a trial should always be made before any important work is done with it. It should not be used thick, but so that it will move freely under the Badger and be level. It is better

* Messrs. Brodie & Middleton Long Acre, London, W.C., and Messrs. Pavitt & Son Southampton Row W.C. supply these goods in great variety and of the best quality.

Wide scope
for artistic
work.

Ground or
obscured
glass.

Pearly white.

See how the
white ground
colour is used.

Fine, y ground
colours a
necessity

No glue size
to be used.

Blue requires
extra
varnishing

Raw and
burnt sienna
need no
binding
medium.

to use it thin and varnish it, and when dry go over again with the colour and varnish. This, however, need only be done when a very deep blue is required. As blue is one of the most important colours used in glass staining, it is worth while to take extra pains with it to have it right. Raw and burnt sienna are the next most important colours. The raw sienna (*i.e.*, unburnt) is the most transparent and most useful yellow we have for our purpose, and forms an exceeding pleasant colour in contrast with the white glass. Burnt sienna is also a most useful colour, giving us many shades of orange or red of a yellow tone, but is not so transparent as the unburnt colour.

Rose madder may also be used in water for small spaces. Whenever this colour is used great care should be exercised to avoid putting it upon parts it is not intended for, as its staining power is so great that it is not possible to clean it off without causing a stain, therefore it should be wiped off those parts at once.

COMMENCING WORK.

The pounce
or trace

We will take a square of ground glass, having previously prepared a suitable design upon paper, having the lines sufficiently dark to show faintly through the glass. Place this flat on a bench or table, then place the glass upon it. This will be the guide for outlining the ornament. Or the design may be pricked through the lines with a needle and pounced upon the glass, using ultramarine blue, or powdered charcoal, for the pounce bag.

Outlining
colour

Having put things right so far we shall want a suitable colour for the outline. This should have sufficient body to be opaque when seen against the light.

Fine, yellow
mixed with
varnish

For this purpose a mixture of lamp-black and Indian red will be the best, as even when thin it is solid and opaque, and takes a firmer hold of the glass than any other colour. It must be mixed with boiled oil and a little ordinary varnish (not spirit varnish) added. A little turpentine may be used with it if it feels or works stiff or fatty. The width of the outline should never be less than one-eighth of an inch, except for inside detail, but for outline an eighth is the minimum width. A less width looks meagre and weak when seen against the light.

How to
outline

In outlining, the point of the pencil only should be used, except in long lines, which may be done either with an ordinary lining fitch and straightedge, or with a long lining pencil, such as the coach painter uses. We now place the wooden rest across the glass and commence work, holding the pencil in a vertical position and using it full of colour, so that it will flow freely from the point. The design being outlined is ready for colouring.

THE PAINTING IN OF THE COLOURS.

How to
colour

We mix raw sienna in a clean earthen vessel with pure water to the consistency required to obtain the depth of colour we need. We now take a flat tin tool about $1\frac{1}{2}$ inches broad; this may be either camel or hog hair; dip it into the colour and spread it over the parts to remain yellow; and when it is laid tolerably even we use a badger-hair softener and lightly soften all the colour, which, if carefully and lightly done, will obliterate all streaks and shades and uneven parts until it is all equal in tone. This requires great care in the doing, and some experience in the use of the Badger. If there is much yellow in the design we generally put it all over the glass, the reason being that the colour is so very difficult to wash off clean, and by going all over the glass when the superfluous colour is washed off the remaining portion will be one uniform tint and will not appear as if stained at all.

Spreading
the colour
evenly

THE VARNISHING OF THE COLOURS

Flowing the
varnish

The colours being dry we proceed to secure with the varnish those parts which are to remain yellow. The best varnishes to use are what are called oil varnishes, and not spirit varnishes. Pale polishing copal or best pale carriage are the most suitable. A quick drying varnish should never

be used for the purpose, as their power of penetrating the colours is far inferior to the oil varnishes, and even these are improved by the addition of a few drops of drying oil (boiled linseed oil) to them. This, while softening and toughening, increases its tenacity and prevents cracking. In varnishing the yellow we use a swan's-quill; camel hair is the best, as it is soft and does not scratch the colour. A larger brush will, of course, be used for large spaces. The brush should be used with a full body and should be spread evenly, so that it will float to an even surface all over. Of course, there is a mean in this as of other things. Too much varnish will prevent its getting hard, and indeed spoil the work. A sufficient body should be put on to make the colour equally transparent, but no more. When the varnish is thoroughly dry the superfluous colour is washed off with a sponge and clean water. This must be carefully done so as not to injure the varnish; the washing should continue until the whole glass is perfectly clean and free from stains. A little soap may be used if the colour is exceptionally hard to clean off, and should the varnish have got on to any part where it should not be, scraping with a knife and rubbing with a piece of pumice-stone will clear it off.

The brushes

Washing-off

The washing done, we have a square with the ornament yellow on a pearly white ground with black outline. For many purposes this is one of the most pleasing combinations of colours we can have. If the design is of a complicated character, and will admit of the use of blue, red, yellow, and other colours, it is necessary, in the first instance, to decide where such colours are to be put. The primary reasons for this being that if blue was placed upon the yellow it would leave a stain which could not be cleaned off again, consequently blue should be the first colour put on the glass, as the other colours do not injure it, but the varnish on the blue should have sufficient time to harden before any other colour that impinges upon it is done. It will, of course, be understood that all the other colours are put on in the same manner as the yellow, *viz.*, laid in, then softened with the badger hair softener and varnished when dry.

Second
colours.

THE USE OF COLOURS GROUND IN OIL.

We now come to the use of colours ground in oil, useful in this system of glass painting; these are indispensable for shading and producing flat tints of colour in every conceivable shade. The singular property of this class of colouring is that while they show the colour quite distinctly, they have only the same amount of transparency of the ground glass itself, and are left unvarnished, and, in consequence, offer a pleasing contrast to the varnished parts. Of course all tints, whether varnished or not, are flat tints, but we use the term here to distinguish these from the varnished parts. Ground glass on account of its roughness has the property of retaining a portion of the oil colour which may be put upon it, and however much it may be wiped off again, it will still retain a portion.

Oil colours
to be rubbed

THE OIL COLOURS FROM WHICH FLAT TINTS MAY BE MADE

Burnt Turkey umber makes a number of useful tints.

Burnt
umber.

Brunswick green and burnt umber produce a series of tints which are useful.

Brunswick green and burnt sienna, also with raw sienna. Also the numerous shades of Brunswick green in themselves give us a great variety of delicate greens.

Sienna.

Indian red is also useful for this purpose. Red, and black.

Indian Red.

Light red gives some beautiful tints of flesh colour, and, in fact, all the wide range of colours may be used for this tinting process.

Light Red.

It is necessary that no colours should be used for glass work but those of a permanent character. We therefore give a list of permanent colours from which to select those which will suit our purpose best.

No fugitive
colours to be
used

THE SIGN-WRITER AND GLASS EMBOSSE.

PERMANENT YELLOWS

Permanent
Yellows.

Naples yellow, lemon yellow, aureolin, yellow madder, yellow ochre, transparent golden ochre, raw sienna, burnt sienna, orange cadmium, Field's orange vermilion.

PERMANENT REDS

Reds.

Chinese vermilion, vermilion, scarlet vermilion, venetian red, light red, red ochre, Indian red, madder carmine, rose madder, pink madder.

PERMANENT GREENS

Greens.

Veridian, a very beautiful but costly colour; transparent oxide of chromium, terre vert. These are the only really permanent greens we have, although, as we have before said, we may use the Brunswick greens.

PERMANENT BLUES

Ultramarine blue, cobalt, cerulean blue.

PERMANENT PURPLES

Purple madder, burnt madder, gold purple, Rubens madder, ultramarine blue and vermilion will make a dull purple.

PERMANENT BROWNS

Vandyke brown, raw umber, burnt umber, brown madder.

The above list are all that will be required either for flat tinting or shading.

METHOD OF PRODUCING FLAT TINTS

It is exceedingly simple and effective, and is done in the following manner:—

We use, say, burnt umber in oil and rub it all over the parts to be tinted, using a boss or ball of cotton wool tied up in two or three folds of old cloth or linen rag. When the space is covered, we take a rag and wipe off the colour again, but in doing this we may leave much or little upon the glass, bearing in mind that the more we wipe off the lighter the tint will be, and vice versa. When we have got it to the exact shade we require, it may be made perfectly level and uniform by using a clean boss of cotton wool, going over all the parts, rubbing lightly in a circular form, and not up and down. The tint may be made equal in density, however large the space may be. Of course, these tints can be varnished, but the effect is better if they are left dead or without gloss. In some cases it is admissible, and a good effect is

produced by varnishing a part of these tints. Lines, letters, or ornaments may be done in this manner, and many quiet effects obtained. All the colours enumerated may be used thus, whether opaque or transparent.

THE SHADING ON THE GLASS

The majority of windows will, of course, be done in flat tints, but both ornament and figure subjects will have to be shaded; but there is no hard and fast rule on the subject, as figure subjects may be done in outline, or coloured either in water or oil colours.

To shade properly will, of course, require knowledge, skill, and experience, but we will suppose that the reader possesses these qualifications.

The brushes required for shading are those commonly used. Hog hair fitches, camel or sable hair pencils. The ordinary small stencil brushes will be found very useful. The special colours for shading will, of course, be governed by the colour to be shaded, but we may point out that burnt and raw umber are the most useful colours for this purpose, as they may be used upon a variety of colours, and will partake of the colour they are put upon, and although it is a dull colour, that very fact is an advantage, as by contrast it enhances the brilliancy of the colour it is laid upon.

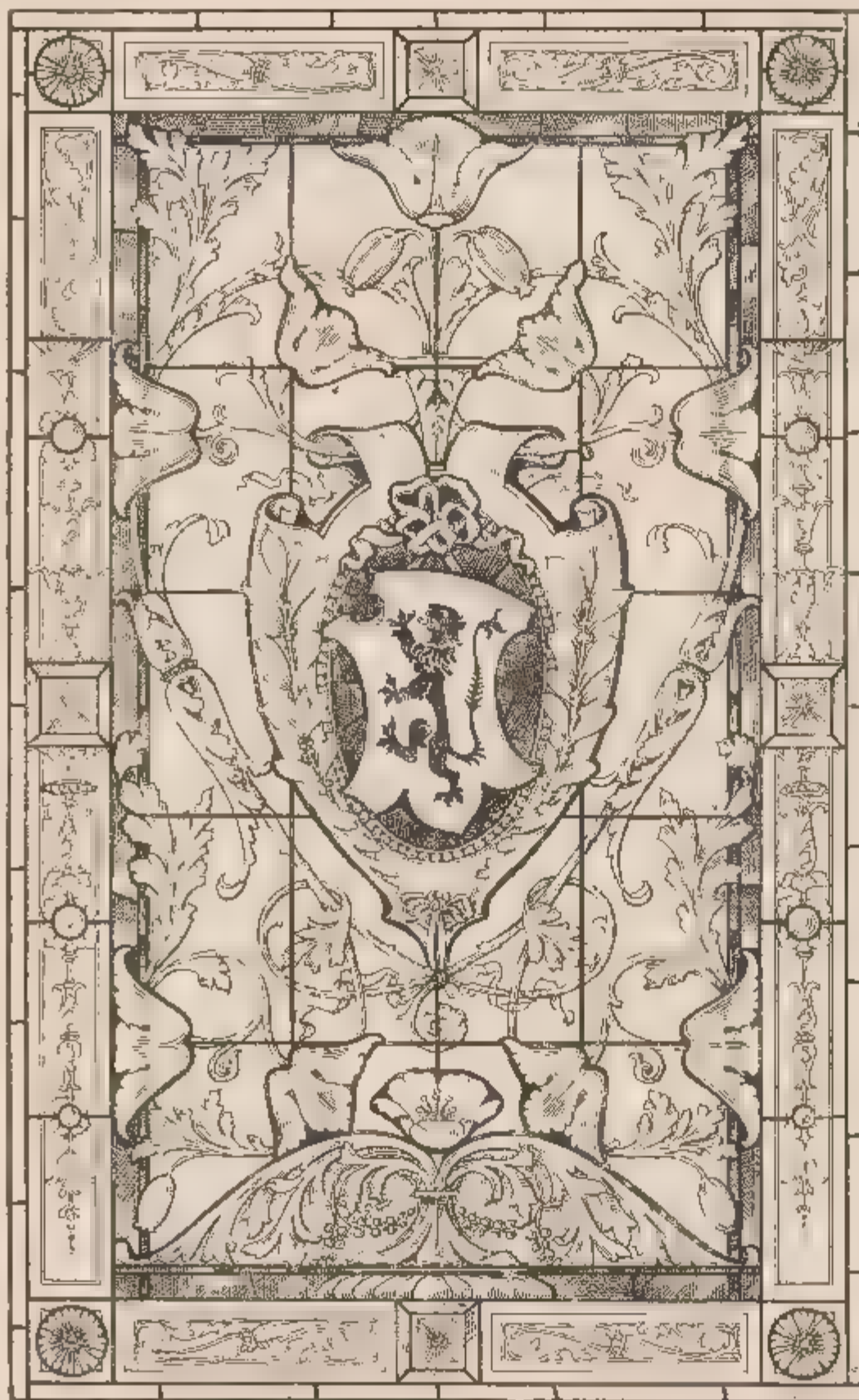
The method of laying on and manipulating the shading colours is as follows: We use a hog hair fitch or sable pencil and paint in the shadows with stiff colour, then use the small stencil brush and stipple it, dabbing it gently with the ends of the bristles; by this means we may spread the colour evenly and graduate and blend the shadows as much as we

like. And by using a clean piece of rag doubled over the thumb we still further soften or blend the shadows into the light parts.

In figure or flower painting, shading in this way will produce all the effects required for the most elaborate design.

Shading may also be done by first laying on the colour and then wiping out the lights and manipulating the half shades in the manner before described.

In some cases, when the colours are few, the shades may be painted on the glass, and, when dry, coloured as directed above.



EXAMPLE OF DESIGN SUITABLE FOR PAINTING ON OPAQUE GLASS

Wipe the
colour off
as much as
possible.

Tools
required

Stippling
the colours
evenly

OUR COLOURED PLATES.

PLATE I.



PLATE I is given as an example of a completed sign wrought in simple colour effects: stony browns, dull greens, red, and blue. It is simple in construction and plan, and easily read.

PLATE II.

Two types of letters are shown here with four different effects of colour and shading. The two top lines are what is called a square letter; that is, they are

as broad as long, and, whilst not an elegant letter, they are useful as showing a variety and for incorporation on a sign with others. The thickness of the raising is refined by the introduction of stripes, which take away from the clumsiness of the letter.

The second row of letters O S E W look larger than the top row, but this is due to the different colour treatment. We think, too, the delicacy of the cast shadow is a point to be noted, as in the row A E G M below; in both cases the letters gain by having the cast shadow light and delicate, as they do not thereby compete with the form of the letter.

The third and fourth lines of letters are the same letters with different colour effects: the line in which the blocking out is done with colour instead of gold yields the most decorative results, but the gold treatment would be the most striking on a sign. On this plate we have adopted a marbled ground as giving a richer and more interesting effect than a plain-painted surface.

PLATE III.

Incised block letter on griotte marble ground. This plate illustrates some effects which may be got by the introduction of marbled grounds. A gold letter and incised would look exceedingly effective on this same ground. It is a useful and suggestive treatment, and may be expanded upon in many directions.

PLATE IV.

French letters and numerals. This is a type of letter which depends for its excellence on the quality of its drawing. It is a most elegant letter, and eminently suited for inscription on a frieze or for a single line on a fascia. In gold on black or dark ground or gold outlined with black on a light ground it is most decorative.

PLATE V.

This is a useful type for a line amongst others. It would not do to use it too freely, or the appetite would cloy with its abundance, and gold letters with dark brown outline, with a pale green, outlined, in the spaces on the letter itself would give a good result.

PLATE VI.

We don't recommend this as a type for large signs. For small name plates and notices it would prove an effective type. It is essentially a modern type, and for small work has considerable attractions.

PLATE VII

This is essentially a decorator's text, and for church decoration is invaluable. In gold, with a dark outline on a light-coloured frieze, it would look well. The type can also be used for capitals, with Old English text for the body of the words.

PLATES VIII., IX., AND X.

These will be found an exceedingly useful set of alphabets to the sign-writer. Plate VIII. is an example of a nice proportion existing between the strength of the blocking, *i.e.*, raising, and the letter itself. We claim for this the merit of colouring at once harmonious and legible. Plates IX. and X. are suggestions for giving interest to letters by the simple means of a light and dark edge: in Plate IX. the ground of the sign making the dark edge, and in Plate X. the ground of the sign making the letter the light edge, and the blocking separating it from the field of the sign.

PLATE XI

A series of examples for church texts, useful and well drawn, and explanatory of themselves.

PLATE XII.

The lower texts are useful for frieze purposes, inscriptions, &c., &c.

PLATE XIII.

Fanciful alphabets, to be used with discrimination, and for small signs rather than large. Irregular-shaped letters do not lend themselves well for incorporation with symmetrical ones, and they are better used where a *quaint* effect is desired.

PLATE XIV.

A letter which is very suitable for fascia purposes, and admits of being used with colour successfully. Would look well on a frieze in a large room.

PLATE XV.

The two upper types are useful for small glass signs, and for giving variety and interest to the work. The lower texts are useful types for church purposes.

PLATE XVI.

This plate is carefully and scientifically explained in Mr. Albert Hoyle's notes, pp. 24-7. Each line is suggestive to the sign-writer, and may be made good use of in many directions.

PLATE XVII

A useful type of letter, much in vogue by certain writers. It requires to be well shaped and sharply finished in execution to look well.

PLATE XVIII.

A sheet containing nineteen different letters and colour schemes, quite a school of types, and one that the student will find helpful in practice. These elaborated letters are not so much in vogue now as they used to be, but for glass signs a very good effect is obtained by their use. The letters N and T are types that look well on glass. The B and M also are effective, but would gain if the raising were not so deep. In colour the R, N, and T rank in that order of precedence. The top S also indicates a striking colour scheme, as does the lower S, although widely different. Altogether the sheet is a useful one.

THE SIGN-WRITER AND GLASS EMBOSSESS.

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GROUNDS AND COLOURS FOR REPRODUCING THE LETTERS

IN

PLATE XVIII.

R. Ground made from mid Brunswick green and white, with touch of raw sienna. Letter white, gold outline, raising pink, made from vermilion and white gradated; shadow black, warmed with touch of red, cast shadows, the first one the ground warmed with red, the second one the ground toned with touch of blue.

S. Ground warm black. Letter gold, raised with broken white, shaded with grey, and striped with a blue, tinged with amber.

B. Ground vermilion. Letter white, blocking gold, glazed with green, etched out; cast shadow warm black.

RH. Ground made from raw sienna, with touch of green in. Letters Indian red, raised with gold edge, slightly shaded with amber; cast shadow, burnt amber and touch of blue in, and white.

T. Ground made from cobalt blue and white, with a touch of green in. Letter gold, raised with white edges, shaded with touch of amber and green; shadow black, with soft blue, faint shadow, the little spaces in vermilion, with black shadow.

B. White ground, gold letter, raised with green made from mid Brunswick green and sienna, with little white, the deeper shadows made by adding amber to the green; inner spaces pink, with shadows of black and vermilion, and outer cast shadows of warm black and thin transparent brown.

N. The same colourings are adopted here, with difference of placing and graded shadows.

S. Ground Indian red, with touch of black in; letter gold, with blue inner spaces blocked white, shaded with pink and brown; cast shadow warm black.

M. Ground brown, made from Indian red, white, and sienna. Letter gold, blocking white, with green stripe shaded with soft warm grey shadows. Cast shadow warm black, and transparent brown shadow on ground.

E. Green ground as top R. White letter, blocking tones of pink; cast shadow warm black.

E. Black ground, gold letter, blocking pink, with yellowy green edges, shaded black.

E. Ultramarine blue, white letter, gold blocking, shaded with amber and green; cast shadow warm black.

PLATE XIX

Shows two arrangements of the Royal Arms drawn in true heraldic manner by Mr. H. L. Chalmers. It will be seen from these two how wide a diversity may be given to the same subject. The colourings, &c., will be found on Plate XXIII.

PLATE XX

These types and numerals will be found useful for purposes of decorating Churches or Gothic buildings of a public character.

PLATE XXI

A Gothic type of the XV. Century, which for texts, inscriptions, and frieze decorations lends itself admirably. The type is a beautiful one and thoroughly ornamental. It belongs to a fine period of Gothic art, and always looks well when well drawn and written.

PLATE XXII

Examples of corners and borders for embossing on glass

PLATE XXIII.

THE ROYAL ARMS. (See page 40.)

PLATE XXIV.

The two alphabets illustrated on this plate are taken from the Coloured Plate XVIII. The letters N and M are the two which are here shown. The first alphabet, which shows the same type as the letter N, Plate XVIII., is the best of the two, more delicate in its outline, and better balanced in the depth of the raising.

PLATE XXV.

A set of five coloured designs for signs.

PLATE XXVI.

Designs for corners, centres, tops, and bottoms for panels in glass embossing.

PLATE XXVII

THE PELICAN

The pelican (feeding her young with blood from her own breast) signifies the Saviour giving himself up for the redemption of mankind.

THE AGNUS DEI

This emblem is typical of Christ, the Lamb of God that taketh away the sins of the world, and occupies an honoured place in the hierarchy of Christian emblems. Its place is generally over the altar table, suggesting its sacrificial character.

ST. MATTHEW, APOSTLE AND EVANGELIST

The four emblematical representations we give here are those almost universally recognised as emblems of the character and attributes of the four Evangelists.

St. Matthew was the son of a Jew, and by profession a publican or gatherer of taxes. He wrote his Gospel to satisfy the converts of the heathen nations of Egypt and Ethiopia. His evangelistic emblem or symbol is an angel, either alone or standing by him while writing his Gospel. He is also represented with a purse or money box, in allusion to his calling.

In our sketch he is represented as an angel in human form with wings, because his Gospel seems to dwell most particularly upon the human nature of our Lord, and commences with His human generation and descent.

ST. MARK, EVANGELIST

St. Mark was also a Jew or of Jewish extraction. He was a disciple of St. Peter, and was sent by him to Rome to found other churches, and the large and flourishing church at Alexandria, the second city of the world in that day, is said to have been founded by him. Here at Easter time, when the unconverted Egyptians were worshipping Serapis, their god, the holy evangelist's denunciation of their idolatry so incensed them that they seized him, bound him with cords, and dragged him through the streets until he died. The Christians gathered up his remains, which were afterwards translated to Venice, where a magnificent church was erected over them: hence St. Mark has ever since been considered the Patron Saint of that city. His emblem or evangelic symbol is a winged lion, or a lion winged or unwinged by his side while he is writing his Gospel.

ST. LUKE, EVANGELIST.

Of the personal history of St. Luke but little is known. He was not one of the Apostles. He was the companion and beloved friend of St. Paul, after whose death he preached the Gospel in Greece and Egypt. He is said to have professed the art of physic, and to have had a taste for painting, and to have left behind him pictures of our Saviour and the Virgin Mary, several of which are said to be still extant. In the woodcut representations of him contained in the Golden Legend, he is sitting before a reading desk, beneath which appears an ox's head, because "he devysed aboute the prishode" of our Lorde. The ox is the evangelic symbol by which St. Luke is represented. He is also the Patron Saint of Painters, and the Painter Stainers Company observe St. Luke's Day as their festival.

ST. JOHN, APOSTLE AND EVANGELIST.

This beloved disciple was a Galilean, son of Zebedee and younger brother of James the Great, with whom he was brought up as a fisherman, a disciple of John the Baptist until he was called by the Saviour. The eagle is the ecclesiastical symbol or emblem of St. John, because the eagle soars highest among birds, and looks with eyes undimmed at the sun. So St. John soared upwards, beyond all the

other inspired writers, in setting forth the divine nature of our Lord, and in contemplating the glory of his Godhead. And for this reason St. John is often represented soaring upwards, mounted on the back of an eagle.

These symbols have always been a favourite subject of mediæval decorators: we meet with them in sacred art, in all positions, and in all materials—carved in wood and stone, painted glass, engraved metals, in frescoes, illuminations, and embroidery, on roofs, on fonts, in windows, and on walls; in service books, and in decorations for the altar. In short, these symbolical forms were introduced wherever by any possibility reference could be directed to the divine writings of those whom they so mysteriously shadowed forth, or to the divine hopes which those writings included.

These symbols have been variously represented at different periods, according to the idea of the artist, as developed by the progress of Christian art. Thus in early Byzantine mosaics and frescoes we meet with the four emblems united in one mysterious form, generally an angel or cherub with four heads—of a man, a lion, an ox, and an eagle—joined on to one body; then we find the heads only, joined on to separate winged bodies of vague form, and having arabesque-like terminations. Sometimes the plain natural animal is drawn, winged, and holding or standing upon a book or scroll; sometimes they have been represented as four men standing, with the heads of their respective attributes, instead of human heads, each carrying his Gospel; or they are four men standing or writing their Gospels, with their distinguishing emblems at their feet.

PLATE XXVIII

RIBANDS, CROSSES, &c.

This Plate is sufficiently explanatory of itself without any words of ours. Our readers will no doubt find it useful for purposes of Church and School Decoration, for which it is mainly intended.

PLATE XXIX.

EMBLEMS OF THE PASSION AND APOSTLES.

- | | |
|---|---|
| 1. The Cross. | 23. The Nimbus of the Saviour. |
| 2. The Sword, the Cord, the Club, and the Lanthorn. | 24. The Nimbus of the Godhead and Trinity. |
| 3. The Sword. | 25. The Emblem of St. Matthew. |
| 4. The Thirty Pieces of Silver. | 26. The Emblem of St. Simon. |
| 5. The Cock. | 27. Emblem of St. Bartholomew. |
| 6. The Pillar and Cord. | 28. St. Matthias. |
| 7. The Scourge. | 29. St. James the Less. |
| 8. The Crown of Thorns. | 30. St. Philip. |
| 9. The Nails. | 31. St. Thomas. |
| 10. The Hammer and Pincers. | 32. Pilgrim's Staff, Scap, and Scallop, St. James, Major. |
| 11. The Seamless Robe and Dice. | 33. The Chalice, Emblem of St. John. |
| 12. The Spears and Sponges. | 34. Emblem of St. Paul. |
| 13. The Cup of Remembrance. | 35. Emblem of St. Peter. |
| 14. The Cross of Triumph. | 36. Emblem of St. Andrew. |
| 15. The Palm of Victory. | 37. St. Jude. |
| 16. The Crown of Glory. | 38. Cross Pattée Maltese Cross. |
| 17. The Rods. | 39. Cross Crosslet. |
| 18. The Sacred Monogram. | |
| 19. The Trinity. | |
| 20. The Cup of Sorrow. | |
| 21. The Cup of Sorrow. | |
| 22. The Emblems of His Woe. | |

PLATE XXX

EXAMPLES OF CONCAVE AND CONVEX LETTERING

PLATE XXXI.

Examples of letters in Projection and Perspective, and recessed.

PLATE XXXII.

Emblems, Ribands, &c., printed in colours and gold.

EMBLEMS AND THEIR SIGNIFICANCE

The two sheets of Ecclesiastical Emblems or symbols will be found of service on many occasions and for many purposes. The painting of banners, shields for temporary purposes, mottoes, &c.

To give intelligibility to the application of these emblems, we give below a brief description of the meanings attaching to each:

1. *The Peacock* (with train displayed), the symbol of the resurrection and immortality.
2. *The Phoenix* (rising from its ashes), emblematical of the immortality of the soul and the resurrection.
3. *The Lion*. Fortitude, strength, and vigilance (Christ, "the Lion of the tribe of Judah").
4. *The Hare* signifies innocence and timidity.
5. *The Apple* on a branch with serpent twining round betokens the fall of man, or original sin.
6. *The Dog*, fidelity.
7. *The Cock*, Christian watchfulness.
8. *The Pelican* (feeding her young with blood from her own breast) signifies the Saviour giving himself up for the redemption of mankind.
9. *Stags* (approaching water) indicate the souls of the faithful, thirsting for the living waters.
10. *Ears of Corn and Bunches of Grapes*, typical of the bread and wine of the Holy Eucharist. *The Vine and Vine Leaf with a Bunch of Grapes* is an emblem of Christ the true vine. *The Palm-branch* signifies victory over death.
11. *The Anchor*, emblematical of a Christian's hope, constancy, and fortitude.
12. *Two Doves* (in a basket), Purity.
13. *A Dove* standing on an olive branch, with a star, the sign of rest and peace to the world.
14. *The Candelabra*, Christ and His Church, the Light of true doctrine, with seven branches, having reference to the seven churches, or to the seven gifts of the Holy Spirit.
15. *Alpha and Omega*, the first and last letters in the Greek alphabet, typical of Christ, the first and the last.
16. *The Triangle*, the emblem of the Trinity.

THE CROSS

The Cross was at first the sign of degradation, suffering, shame, it has become the symbol of the Saviour's love and man's redemption, the outward and visible sign of a faith which accepts the Cross and its associations as the highest expression of divine love and human endurance.

There are two forms of the Cross, the Latin and the Greek. The difference is that in the former the shaft or upright portion is longer than the other arms, whilst in the Greek Cross the arms are all equal. It has been suggested that they typify the character of the two peoples very well. The Romans, the most practical nation in the world, adopting the form of the actual Cross on which the Lord suffered, whilst the Greeks idealised it and made it an emblem, the four equal arms suggesting the four quarters of the world.

Sometimes the Latin Cross is mounted on three steps, which is held to typify the three Graces, Faith, Hope, and Charity, and is then called the Cross of Calvary, or the Passion Cross. Generally speaking, the Greek form of the Cross is more florid and ornate than the Latin one, the conventional form more readily admitting of this.

There are other varieties of the Cross. The T having only three branches, this is supposed to be the Cross held up before the dying Israelites when bitten by the serpent. It is also called St. Antony's Cross.

The next best known Cross is the Maltese Cross, so-called because it was the badge adopted by the famous Knights-Hospitalers of Malta. It is equal sided, but each arm is of the form of a long V, the fine points meeting at the centre, and the broad ends indented.

Then there is St. Andrew's Cross, which consists of two plain bars, crossing each other at angle of 45 degrees. There are many other forms of the Cross, but they are heraldic and not in common use. The Cross Potent, the Voided Cross, Cross Flecho, Cross Pommee, Cross Mohue, Cross Henrie, the Pope's Cross, the Bishop's Cross.

THE NAME OF CHRIST

Next to the Cross comes the name of Christ as the most largely used of the symbols of the Christian Faith. **I.H.S.** **X.P.** **I.H.C.** The first and last are the two first Greek letters of our Lord's name, Jesus. The **X P** are simply the letter P planted on a St. Andrew's Cross: it expresses the name of our Lord by its two first Greek letters.

The above constitute the principal Emblems employed in Church Decoration, and will be found useful to the readers and subscribers of "The Art and Craft of Sign-writing."

EMBLEMS OF THE FRIENDLY SOCIETIES OF GREAT BRITAIN.

The Friendly Societies of our country are one of the most gratifying evidences of the thrift and forethought of our working classes. They are also a tribute to the stability of our institutions and the capacity inherent in our artisan classes to control and direct large organisations and vast sums. The accumulated funds of the Friendly Societies of Great Britain and Ireland when aggregated amount to a stupendous figure, and the united action of these powerful societies is such as to give pause to even the strongest governments of modern times.

As the emblazonment of the banners of these societies is a constantly recurring call upon the sign writers and banner-painters

art, we thought that it would be convenient to the subscribers to "Sign Writing" to have these devices collected and submitted in a concrete form. We have, therefore, illustrated a number of these Orders from the certificates kindly supplied by the officers of the various societies.

The emblazonment of these emblems do not follow strictly on heraldic lines; but as they are accepted and recognised by those responsible for them, they suffice for our purpose.

The descriptions which accompany the emblems are taken from the published records of the societies, and illustrate the intention of the designers.

KEY TO THE EMBLEMS OF THE ORDER OF DRUIDS.

THE OMNIPOTENT EYE

Appears in the foliage of an umbrageous oak, standing on the right behind the Druid, and whose branches form as it were the canopy of an imaginary shield. The Omnipotent Eye, that is unseen except in the wondrous works of creation, in the constellated heavens, in the rise and decline of nations, and in the world's mutations, is itself All-seeing searching the hearts of men, enlightening their understandings, and instilling into them the great and saving truths of the Christian faith; and it points to the great Lawgiver of the Universe.

THE ANCIENT DRUID

In pontifical costume, as the right support of the shield. The Ancient Druid appears to be hoary with age; a venerable beard hangs down to his girdle; his left arm is resting on a harp, whose minstrelsy was often employed by the bards whilst in verse instructing the noble youth in their rites and ceremonies, in natural history, astronomy, philosophy, and all the other arts and sciences in which they alone were peculiarly gifted. The harp was also employed in leading the foeman to battle, in recording victory, and in the soothing and more sublime influences of religious instruction and preparation for eternity. In his right hand is a wand, pointing to the diagram at his feet, the other end of the wand having upon it the sickle or billhook wherewith the mistletoe was gathered. An oak leaf wreath encircles the brow of this venerable sage, and the mistletoe is garlanding the rude oak that affords it protection; it was collected in the new year, and when the crescent moon was six days old, in form resembling the bars or ark, which rested on the two-peaked Ararat when the world's flood subsided. The mistletoe was found in dense forests, clinging like a tendril to the oak, and with golden sickles they bring it down with pious care and great solemnity, and within the sacred precincts of their temples distributed it to the people.

As to the antiquity of the Druidical institution, history, tradition, and collateral facts carry it back to the deluge—that the Druids were descendants from Japheth, a son of Noah, who carried into the new the revealed religion of the antediluvian world, and were at enmity with the rival system of fire-worship, which ultimately propagated anarchy and bloodshed, and, at the dispersion of the tribes from Babel, 2,247 years B.C.



ANCIENT BRITON

The left-hand support of the shield represents the aborigines of England, and is an indispensable figure for the position assigned to it. It is clad in the spoils of the chase, which are looped on the right shoulder, on the breast is suspended a medal, made from a pearl shell, with a serpent carved upon it; on his left arm is an armlet. In his right hand he holds a long spear, and resting his left on a circular buckler, on which is entwined a serpent—an emblem of universality. It also recalls to mind the fall of man for disobedience to the Omnipotent decree; its employment as a scourge to the Egyptians on refusing to let the children of Israel go. It was treated by the Druids as a symbol of the Deluge. The figure indicates great muscular development, courage, and readiness for battle. Wielding their battle axes the Ancient Britons, in their terrible war chariots—with short swords fastened to the axles—rushed to the onslaught, striking terror into the hearts of their invaders and enemies, and displaying not only undaunted courage but great military skill in warfare.

THE DIAGRAM

In the Emblem represents the seven planets: Jupiter, Mars, Saturn, Minerva, Mercury, Apollo forming a circle, with

the sun in the centre. The triangle power is seen in the equilateral triangle, which is the strongest form of junction, as evidenced in the pyramids of Egypt and the arch which arose out of its power. Its unity, as in the trinity, is in conformity with the circle. These forms are symbols of Perfection and Strength, and were held in great veneration by the Druids. How closely and ultimately united are these numbers. For instance, place seven shillings together on a table and six will encircle the seventh, each one of the seven touching three at one and the same time—showing the beauty of mutual dependence, and that greater the outward pressure the more compact and impervious becomes the mass. There are seven days in the week, the Creator created the earth in six days and rested on the seventh, and hallowed it. The custom was to send a child to school at seven years old, and it still prevails in some places; to put it to business at 14, and at 21 the three sevens have been combined in the three periods of life.

Around the edge of the diagram is the motto of the Order—"Integrity for our Rock." It is winged, as indicating its ethereal

THE SIGN-WRITER AND GLASS EMBOSSE

character, and it rests against a Roman fasces, composed of a bundle of rods tied together, with an axe in the centre, denoting that unity was the Roman empire's strength, and the severity of justice, whose integrity and authority must be strengthened by unity. The fasces used to be borne by the lictors before the chief magistrate of Rome—particularly the consuls. With these staves or rods malefactors were beaten before execution. They were usually carried on the shoulder as a mark of respect, but to express grief or mourning their position was reversed. It was the duty of the lictors to carry the fasces before the magistrates; 24 lictors walked before a dictator, 12 before a consul, decemvir, or tribune with military power, 8 before a praetor, and one before a vestal virgin. The fasces is therefore judiciously placed in our emblem as manifesting that our strength consists in our unity.

THE BEEHIVE

Immediately behind the Ancient Briton is a Beehive, an emblem of Prudence and Industry; in the bright months of summer storing up sufficient food for the requirements of winter, and indicating that the young should, whilst health and strength are left them, and before the cloud of adversity lowers upon their path of life, prepare for the dreary descent to old age, decrepitude, and the grave. Your instructors like our own, wherein, shall they ever need its succour, they will have opportunities of succouring others who need it, and where the Christian duties of charity and benevolence are taught, and moralities of life strictly enjoined.

THE DOVE

In the centre perspective of the emblem a Dove appears to be flying from an ancient to a modern world—from an age extending beyond the pale of history to another of philosophy, genius, science, and commercial enterprise, from the lone run it has left behind it to greet our new institution, and to dwell with us for ever. It would seem to be alighting upon a modern column, around the base of which are grouped several shields, the three centre ones representing England, America, and Australia, in which places the Druidical institution is winning such renown.

The introduction of the Dove into the emblem is peculiarly suited to the purpose, because of its great antiquity and its frequent mention in Scripture and Druidical history, and more specially because it is an emblem of Purity, Peace, and Constancy.

THE PASCAL LAMB

Is shown in front of the centre, emblematical of those slain on the night before the departure of the children of Israel from Egypt. The Great Redeemer of the world is represented as the Lamb of God, and His precepts and example of purity, innocence, and virtue were ordained for universal acceptance, and, if followed, will prove a safeguard to realms of eternal happiness. How beautiful is the Lamb typified in language solemn, majestic, and full of import in the fifth chapter of the Revelations.

THE MALTESE CROSS

In the foreground, represents the advent of the Christian faith as revealed by the Saviour of Mankind, and the sickle, reposing on a sheaf of corn lately gathered, reminds us of the final harvest, when all the living will be housed in the garner of death, and the words of the poet Campbell will be fully realised.

THE CORNUCOPIA,

Or Horn of Plenty, is another prominent object in the Emblem. It is the horn of plenty by which fruitfulness is denoted. Classically it was said to be the horn of the goat that suckled Jupiter; according to others, the horn which Hercules broke off from the head of Achelous, who was changed into a bull, and affords another symbol of Druidical rites and sacrifices.

THE MEDALLIONS

Beneath the shield, and on the right, is a medallion representing a widow and her children hastening to the sanctuary of their God. It is an early Christian Temple, with Gothic windows. There are some rudely carved headstones in their path. At the foot of one of them is a skull, denoting the sad termination of human greatness. In the interior they will experience the consolations of religion, and hold sweet communion with their Redeemer. The group appear to be mourning and in tribulation, and may be viewed as representing the sacred relics of departed brethren, who had committed these treasures of their hearts to our watchful care and sympathy.

THE GOOD SAMARITAN.

The left medallion represents the well known parable of the Good Samaritan. What an incentive to our charity! showing that though villainy may deprive virtue of its goods, brutality peril its existence and the world walk passively by calmly witnessing the wreck without stretching out the arm to help—the quiet, unpretending, charitable Good Samaritan pours balm into the wounds of the sufferer, and extends his willing aid when hope of other help had faded, and death was about to close the scene upon the lonely oppressed wanderer. It is a charity that shuns all witnesses, and finds its reward in the holiness of its vocations.

KEY TO THE MERIT EMBLEM OF THE ORDER OF ANCIENT SHEPHERDS



The Merit Emblem is designed as a presentation to members who have satisfactorily filled offices in the lodge or district, and been the means of increasing the membership, and in other ways extending the interests of the Loyal Order of Ancient Shepherds, Ashton Unity.

1. The Massive Ashlar Foundation, worked and polished, indicates that labour is the lot of man and that perseverance is necessary to establish perfection. The middle base, and the left and right hand pilasters being firmly bound together, denote wisdom, strength, and beauty—wisdom to contrive, strength to support, and beauty to adorn.

2. The Open Book The Holy Bible, on the left-hand pilaster, every true Shepherd will consider as the unerring standard of truth and justice, and will regulate his actions by the divine precepts which it contains.

3. The Scales or Balance, a well-known instrument for weighing—"A false balance is an abomination to the Lord, but a just weight is His delight." Justice, the boundary of right, constitutes the cement of civil society.

4. The Green Foliage running up the pilasters denote that the principles espoused by Shepherdry are destined to flourish and spread in the world. The principles of truth never die—ever green, and full of vigour.

5. The Shield on the right-hand pilaster represents a star—one of those heavenly bodies that shine in the firmament by night, and, along with the moon, combine to display the magnificence and extent of the creation.

6. The Shield on the left-hand pilaster represents the arms of our country, and, as the Loyal Order of Ancient Shepherds, we have here our loyalty set forth.

7. The Landscape, with the graveyard and monuments, is indicative of the loss of a husband and father. The widow and children, pursued by the skeleton form of a human being, denote destitution, hunger, and want, and are fleeing for help to the arms of Charity. At the feet of Charity is the Cornucopia, or horn of plenty, indicating that sources are provided to relieve the needy and distressed.

8. The Shepherd and Shepherdess present an embodiment of conjugal happiness and mutual love to each other, and each bearing

a crook, signifies that it is the duty of the wife to be a helpmate to her husband. The sheep are emblematic of helplessness and patient submission, and entirely dependent upon the Shepherd's care. The dogs are a symbolic representation of faithfulness.

9 The Order Shield, betwixt the Shepherd and the Shepherdes, being divided into four by the Cross, is suggestive of the four cardinal virtues, viz., Temperance, Fortitude, Prudence, and Justice. In the top compartments is the representation of the Birth of Christ, and the Cross on Mount Calvary. In the lower or bottom compartments are the Crooks laid crossways, emblematic of brotherly love and union in action one with another, and a representation of King David, the Royal Shepherd, with his harp.

10. The Ribbon and Motto. The Motto, "Christus noster Pastor," signifies Christ, our Pastor and Teacher. The Ribbon upon which is inscribed this beautiful motto, is taken to denote a life of virtue, the wearer may be distinguished as a follower of the Good Shepherd.

11 The Cross and Wreath. The Cross reminds us of the price paid for our redemption as a fallen race by the death of the Good Shepherd. The Wreath denotes the victory He achieved by His death.

12 The Hive and Bees are intended to teach lessons of industry and care.

13. The strong and extended span of the Arch, with its three panels springing from the solid foundation, denote protection, care, and help to Bro. Shepherds in any part of the world, and of the enduring principles upon which our Order is founded.

14. On the Left-hand Panel is a representation of Jacob waiting at the well to give water to the sheep.

15. The Right-hand Panel represents the young industrious shepherd using his best means to lead other young men to his lodge.

16 The Figures in the middle panel at the crown of the arch may represent the faithful and industrious Shepherd, who has borne the burden and heat of his day, revered and loved by his brethren, who, for his faithful and untiring service, crown him with the best laurels of the Order, and in his old age rests in peace in the midst of his brethren.

17 The Dove at the top of the Emblem is the symbol of simplicity and innocence.

RATIONAL SICK AND BURIAL ASSOCIATION.

The Certificate is placed at the foot of the subject, on a tablet of architectural design, the piers of which are appropriately adorned with two funeral urns. The tablet supports a framed picture, with floral decorations; it illustrates one of the main objects of the association, and represents a scene at the grave.

On the left is introduced a group of mourners, showing the widow of the deceased, overwhelmed with sorrow, supported by a female friend, whilst another is taking charge of the youngest child. Two orphan boys are also introduced, the younger represented overcome with grief. The group is completed by the figure of the nearest male relative or most intimate friend of the deceased, and his faithful dog, who has followed the corpse to the grave.

To the right is shown the minister, reading the burial service over the remains; the clerk, gravedigger, and a group of rustic children complete the composition on this side. In the background behind the mourners are the undertaker and two of his assistants, and the parish church fills up the space on the right, behind the clergyman.

On a tablet beneath is the text,

"In the midst of life we are in death."

Above this picture, and forming the centre-piece, is a circular subject in an ornamental frame illustrative of the other objects of the association, and entitled *"Sickness and Infirmary."* To concentrate the interest, and combine both objects in one piece, the invalid is represented as a venerable, infirm, aged man, propped upon a pillow, and surrounded by his family. His son is supporting him on one side, whilst the daughter-in-law is about to administer a cordial to revive him. His grandchildren are shown around the bed, two girls kneeling in front to receive his blessing, and two boys on the other side complete the group; whilst in the background is shown an elder sister, introducing the visiting officer of the society, bringing the relief from the sick fund of the association. On either side winged cherubs are introduced, bearing labels inscribed with the text, *"Cast me not away in the time of sickness, Forsake me not when my strength faileth me."*

Immediately behind is an architectural entablature supporting a bold base, bearing the designation of the society, *"Rational Sick and Burial Association"* in large capital letters, beneath which, on a panel the date of the institution is inscribed, "Established



January 1st, 1837." The subject is further embellished by the introduction of two cherubim, one bearing a celestial Crown, the other the Book of Life, in which are inscribed the names of the blessed.

A vision of glory is displayed immediately above the title, filling the crown of the arch which bounds the subject, representing the apotheosis of the deceased member, and showing an Angel bearing a palm branch conducting the soul of the departed to the realms of bliss.

On either side of the entablature are placed two supporting emblematical figures, that on the left representing Justice, with sword and balance, Truth, with a mirror being placed to the right the mystic symbol of Eternity, the Serpent, with its tail in its mouth, being placed on the pith at her feet.

In a panel beneath the figure of Justice is a medallion showing the Heart-in-Hand as the emblem of Friendship, balanced on the other side by the device of two Lark Doves, as the symbol of Love.

The spaces below are occupied by emblematical figures personifying the three Christian Graces, Faith and Hope being introduced to the left, balanced by a group of Charity to the right. A sleeping cherub symbolical of the Sleep of Death, is shown in front to the left; another placed to the right is represented mourning over the frailty of human nature.

The motto of the association, *"Friendship, Love, Justice, Charity, Truth,"* is introduced in a panel above the Certificate; the clasped hands as the emblem of Union being placed in the centre in front, the Scythe and Hour Glass, the inverted Torch, the extinguished Lamp, and the closed Volume—the emblems of Mortality being placed on either side, the whole forming a complete pictorial allegory, as well as a device appropriate to the association for whose certificate of membership it was designed.

THE SIGN-WRITER AND GLASS EMBOSSEY.

KEY TO THE EMBLEMS OF THE ORDER OF ODDFELLOWS.



I THE EMBLEM OF THE ORDER

This was instituted in 1837, and is composed of hieroglyphical representations of Britannia attended by Europe, Asia, and Africa, bestowing the Grand Charter upon the United States of America, through its typical representative—the Indian of that country; whilst the Ship in the offing waits to bear the precious charge across the Atlantic. The Lion Couchant illustrates the dignity, strength, and honour of the Order, the whole picture, sculptured in granite, being supported by squared white marble blocks, upon which are emblazoned the Arms of Manchester and the British Empire. Upon these pedestals are represented the three cardinal virtues: Faith, Hope, and Charity—bearing their distinctive symbols, the Cross, the Anchor, and the Orphan, whilst between the group, and resting upon the granite block—fit type of the durability of the Unity—is displayed the Shield, enriched by the Cornucopia, or the Horn of Plenty, and the Dove with the Olive Branch, as indicative of peace and reconciliation. The Shield is quartered by the Christian Cross in token that the Order is founded upon the principles of the Gospel, while across its base is displayed, in the Latin tongue, the motto—“*Amicitia amor et veritas*.” Upon the Shield are depicted the Hour Glass, as typifying Time; the Cross Keys as emblematical of knowledge and security; the Beehive, illustrative of industry, thrift, and frugality; and the Lamb and Flag, as symbolising Christianity and Innocence. Upon the centre of the Cross is fixed the Crusaders’ Shield, bearing the Rose of England, the Thistle of Scotland, the Shamrock of Ireland, and the

Leek of Wales; thus indicating the close union that exists in the brotherhood throughout the British dominions. Above is displayed the Terrestrial Globe, enclosed by the Laurel Branch, surmounted by the Open Hand with Heart, signifying the universal character of the mission, the victory attending its prosecution, and the friendship and love by which its extension is distinguished. Above all, and encircling the whole with Divine effulgence, beams the Omnipotent Eye of the great Creator.

II THE EMBLEM OF THE WIDOW AND ORPHANS’ SOCIETY

This was instituted in 1851, and the representation is of a most striking character. Beneath the Floating Banner of the Unity stands Charity and Love, in the form of a beautiful woman clad in white robes, as emblematic of the purity of her motive. With her right arm she supports the agonised widow, who, with her terrified children, is flying from the clutches of grim Want, and is seeking refuge within the ranks of this Society. Want, who is striding across the Grave of the deceased brother, is aptly depicted carrying the Flag of Death, whilst Love with firm and dignified gesture commands him to stay his course. Upon the front and arch of the granite base are engraved the Arms of the Order, whilst the Arms of Manchester and the Empire flank the Shield and the Motto runs on a Ribbon across the whole. The Rainbow surmounts the picture in token of the Covenant made on behalf of those left by the member who has passed away.



* Not Illustrated

* III

There is another Emblem, designed by White, of Manchester, and issued by the Directors, but the Crest of the Order and the Motto are omitted altogether. This is, nevertheless, a favourite Emblem, and represents widows and orphans kneeling at the tomb of the deceased Brother. The Arms of the Order, and much of the machinery and symbolism already described, are likewise presented here. The Frontispiece of the *Magazine* and some books are exhibited, and at the base is depicted the Good Samaritan in the act of raising his wounded neighbour, whilst Priest and Levite are passing by on the other side.



* IV.—JUVENILE EMBLEM

Upon a carved pediment ornamented with a border of the national flowers and broken in the centre by the Crest of the Order, sits (the Manchester Unity symbolised by) a mother with her intelligent and sturdy children listening to a P.G. clad in full Regalia, whilst he expounds from a scroll the aims and advantages of the Juvenile Lodge. Hope, represented by the Anchor, most properly occupies a prominent position in this design, whilst the Ship riding at anchor in the harbour indicates the readiness of the Unity to spread the knowledge of these Lodges throughout the world. In the left basement of the block is represented the Good Samaritan, whilst in the right is seen the return of the Prodigal to the loving father's embrace; the Arms of Manchester and the Empire ornamenting the respective recesses. Below, in the centre, is the full Shield of the Order, backed by a view of the Terrestrial Globe, signifying that the Society in all its divisions is yet one in unity and in work, and prepared to extend its operations within the realm of all civilised society. The Eye of Omnipotence, as in the Emblem of the Order, illumines the whole scene.

KEY TO THE EMBLEMS OF THE ORDER OF RECHABITES.

The Coat of Arms consists of a Shield, with its Crest and Supporters. On the centre of the Shield will be seen the Eye. In its highest sense it represents the attribute of Omnipotence.

Above the Eye is a Lamb. It represents the Lamb of God, who taketh away the sin of the world, and who sitteth in the middle of the throne to feed and bless His creatures.

* Not I, assumed



In the left compartment of the Shield there is a Sun. This is intended to represent the Lord in the highest or supreme sense. Hence David, in the eighth Psalm, says: "The Lord God is a Sun and Shield."

In the opposite compartment to the Sun is a Moon and Stars. As the Moon reflects back again to us the light of the Sun, so does every true Rechabite reflect back upon the world the glorious principles of total abstinence.

In the lower compartment, on the base of the Centre-piece which contains the Eye, there is on one side a Serpent, and on the other Two Doves. The Serpent and Doves point to our Lord's own words: "Be ye wise as serpents and harmless as Doves."

Underneath the Serpents and Doves are Three Tents. The sons of Rechab dwelt in tents. These remind us of that peculiar people from whom the Order derives its name.

Underneath the Tents is a Rainbow. It is an emblem of God's covenant with man after the Deluge, and forcibly reminds all true Rechabites of the firm reliance they can place in the promises of Jehovah, who will never forsake the good man who calls upon Him in the day of his trouble.

As an Emblem of the Order, the Rainbow reflects all shades of colour, signifying that the pure principles of Rechabism, if strictly acted up to, are pre-eminently calculated to do good, and to give comfort, assistance, and happiness to men of every hue and every clime, whatever be their nation or people, their kindred or tongue.

The next Emblem is the Rose, Thistle, and Shamrock. These are the national emblems of the United Kingdom, where the principles of entire abstinence from all that can intoxicate have been promulgated and made known.

The Supporters of the Shield. One side of the Shield is supported by Peace, holding in her hand an Olive Branch, her usual emblem, and on her left, immediately above the Shield, is suspended the Sword of Justice, covered by a similar Branch of Olive.

The other Supporter is a figure of Plenty, having in her left hand the usual emblem, a Cornucopia. This again is applicable to total abstinence; for though Temperance, even of the most exalted kind, is not Plenty (and the same may be said of Peace), yet it is the means of bringing out and giving life and energy to every power of body and of mind, and thus the truly temperate man, under the influence of the Divine blessing, is placed in the best possible position for using those powers in providing plenty for himself and those dependent upon him for support. A Horn denotes power; hence David says, "My Horn hath Thou exalted above measure."

The Wheat Sheaf is another Emblem of Plenty, and is used as an appropriate accompaniment to the one Supporter, as Peace covering the Sword of Justice is to the other. Another reason for both is, that they are a proper balance to the whole picture or design.

In Scripture the Wheat Sheaf denotes goodness, either temporal or spiritual, as this, when speaking of the spread of Divine truth, "There shall be a handful of corn upon the top of the mountains, the fruit thereof shall shake like Lebanon."

On a reference to the Crest, we find it to be a Bee Hive, with Bees about it, and supported by, or placed upon, a Twisted Cord.

The Bee Hive and Bees are emblems of, and are intended to represent industry, and its sweets—blessings which can only be enjoyed in their genuine purity by the truly temperate and industrious. It is also intended to point out that by industry and perseverance the greatest obstacles may be removed and difficulties overcome.

The Twisted Cord under the Bee Hive represents the union which exists among genuine Rechabites.

THE SIGN-WRITER AND GLASS EMBOSSE

KEY TO THE EMBLEM OF THE NATIONAL
UNITED ORDER OF FREE GARDENERS.

At the top of the engraving is the Cornucopia, or Horn of Plenty, indicative of Peace and Plenty, augmented from two branches of the Doric order, the most ancient of Greek architecture.

The extreme angles of the ornament are supported by circular wreaths, in the centre of which, to the left, is the figure of a man endeavouring to break a bundle of sticks, emblematic of the Bond of Unity; the figure on the right represents the Good Samaritan mitigating the sorrows of one in distress.

Under the Cornucopia is the All-seeing Eye of Mercy, Justice, and Truth in the centre of an architrave of twisted oak branches forming a bower of trees in the background, in a high state of cultivation, showing the results of the industrial care of the Gardener. In the centre of the Arch, under the Eye, is the Dove with an olive branch, signifying Peace.

The Gardeners' Shield, surmounted by the Rose, Shamrock, and Thistle, emblems of the United Kingdom. The Shield is divided into four compartments, separated by a cross frame of Gules, which in heraldry means bold in all honesty. This is surmounted by a less shield (in the centre), containing the initial letters of the Passwords of the Degrees. In the left-hand top compartment is the Beehive, the emblem of Industry and Commerce; in the opposite angle is the Lamb and Cross on a field of gold, betokening Wisdom, Riches, and Elevation of Mind. The figure under the Lamb is Hope, with the Anchor, denoting Rest and Safety; opposite to which is Faith, with the Cross, signifying Devotion, or a trial of our patience.

The left-hand Supporter of the Shield is the figure of Justice holding the Balance Scales in her right hand, and the left resting upon the Globe, appended to which is the Sword, illustrative of her power in the administration of the laws of the world.

The right-hand Supporter of the Shield is the Widow and her Children, as Orphans, embracing the characteristics of Love, Alms, Affection, and Tenderness.

The motto on the Ribbon or Web of the Shield is the Latin for Justice and Charity, under which are strewn the Harvests of Fruits.

On the Slab of the Pediment is a representative of Adam and Eve in the Garden, before the Fall, as suggested from Milton's 'Paradise Lost', Adam pointing to the Heavenly Messenger, who comes administering to his comfort and instruction; Eve is attentively listening to her partner, portraying both innocence and devotedness to Adam. In the foreground of the Landscape are the Lion and the Lamb lying in unity together, emblematic of Concord and Agreement.

KEY TO THE EMBLEM OF THE HEARTS
OF OAK SOCIETY.

In the foreground is introduced the "Hearts of Oak" represented as a felled log of oak timber, the branches of which are contrived as to form a framework for three of the illustrative subjects, and to display labels with suggestive and appropriate inscriptions. The background is filled with an architectural entablature, having several panels containing three other subjects, and supporting three sculptured emblematical figures representing Britannia, Agriculture, and Commerce; on the plinth at the base are seated figures of Neptune and Father Thames.

Britannia is typified by an armed female figure, with the British Lion by her side, holding a trident and leaning on the rudder (the emblems of maritime power); beneath her in the central compartment is represented the "Channel Fleet" exemplifying the "Hearts of Oak" as employed in the construction of the wooden walls of Old England (under whose protection agriculture and commerce flourish without interruption), and displaying as the principal object a first-rate man-of-war aptly denominated the "Hearts of Oak."

Agriculture and Commerce, the handmaids of civilisation, are symbolised by two youthful female figures, each bearing a thyrsus terminating in the "Acorn" (the germ of the "Hearts of Oak"), and holding each a palm branch (the emblem of Peace) with other appropriate emblems. Agriculture being represented with the Horn of Plenty at her feet, a sickle in her hand, with the wheat sheaf and plough beside her; whilst Commerce has at her feet an anchor, an invoice in her hand, beside her a bale of goods, and the terrestrial globe to denote the universal extent of the commerce of Britain.

In the two lower compartments on either hand are exhibited to the left the ocean, the silent highway by which the productions of the agriculture of the earth are conveyed through the agency of commerce to the port of London (the emporium of the world), and to the right the River Thames, while the panel between them contains an illustration of the well-known lines quoted on the label below, and displays a specimen of the British seaman, one of the veritable "Hearts of Oak" standing on the deck of a vessel homeward bound.

The remaining panels are occupied on the left with a representation of "Hearts of Oak" as applied in the construction of timber dwellings of the time of the sixteenth century, and the companion subject on the right shows the interior of a room of the same period wainscoted with old oak, with oak furniture and an oaken cudgel of the same character.

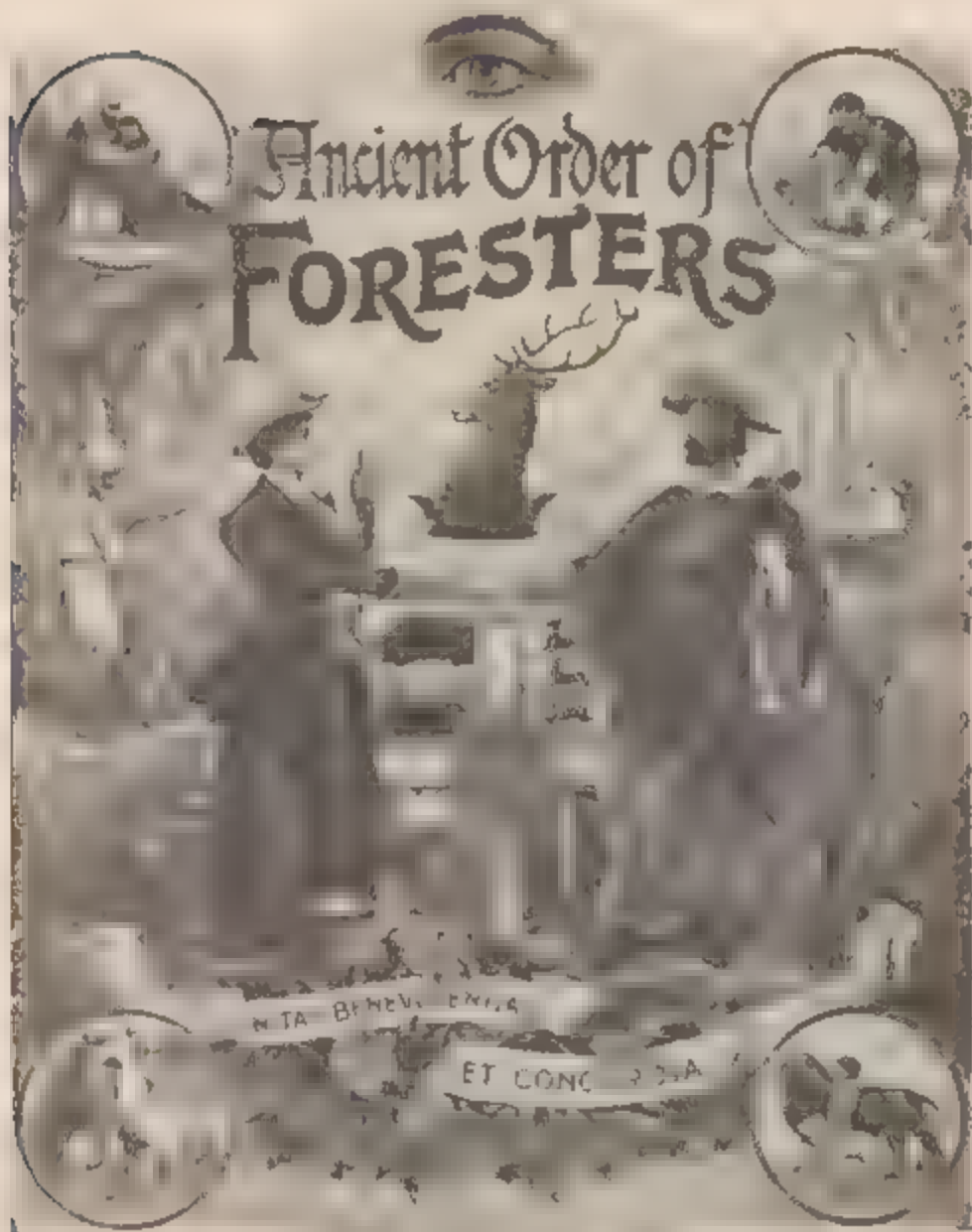
The idea of Unity is signified by the Roman fasces, which form a conspicuous object in the foreground, having in front on a scroll the motto "Union is Strength," behind which is a shield bearing the arms of the United Kingdom, surmounted by the crown, and accompanied by the national emblems, the rose, shamrock, and thistle.

The inscriptions on the labels are executed in letters designed to appear as if carved in "Hearts of Oak."

THE SIGN-WRITER AND GLASS EMBOSSEER.

55

KEY TO THE EMBLEM OF THE ANCIENT ORDER OF FORESTERS.



Under the All-seeing Eye which appears at the top of the design, is shown prominently the title "Ancient Order of Foresters." Below this is the crest of the Order, a stag's head, springing from a coronet; below this again is the shield of the Order, divided into quarters by a cross, in the centre of which is a smaller shield or mescutcheon carrying the hunter's horn. On the right-hand corner of the shield is the clasped hands, significant of friendship and unity, whilst in the opposite lower quarter is the quiver of arrows. In the left-hand quarter are three harts, galloping, and in the opposite quarter is the Agnus Dei. The supporters on either side are a male and female forester in hunting attire, greeting, with right hands clasped and their left hands supported on their bows, a deerhound being at the male forester's side. Under the centre portion comes the motto "Unitas Benevolentia et Concordia," in scroll, interspersed with the floral emblems of the United Kingdom (rose, shamrock, and thistle). The background is composed of a woodland hunting scene, all carried out in colours. In the four corners are sepia drawings, which illustrate charity, unity, obedience, and peace.

As showing the elasticity permissible in the representation of the Arms of these Orders, we give some illustrations of the same Orders taken from another source which show the essentials retained, but a great diversity in the arrangements and details. It will be seen from these that there is great scope for the individual artist to invest the essential of the picture with a great variety in the arrangement of the environment.

COLORING OF THE EMBLEMS

To assist our readers in the more accurate portrayal of these emblems, we attach here a description of the colours used in the printing of these emblems, and give them in the order in which they occur in our columns.

ODIFELLOWS (MANCHESTER).

The shield above the pediment (which is of a green colour) is divided by a gold cross in four quarters. In the first on a red ground, is an hour glass, in natural colour; second, on a dark blue ground are two gold keys; third, on a light blue ground is a golden beehive, surrounded with white bees; and in the fourth, the Agnus Dei, in natural colours on a red ground. The smaller shield in white, and the emblem in natural colours. The figure on the left holding the cross is clad in yellow, blue, and white, the figure holding the anchor in red, the figure holding the child in purple and white head dress, and the two children in yellow and red. Cross the globe in blue, with the continents in yellow, encircled with green laurel; the hand in its natural colour, with the heart red; the wreath is white and red. Below the shield, beneath the motto, is a cornucopia in natural colours; in front of the motto is a white dove. The arms on the blocks on either side of the panel in relief are in heraldic colours, outside, the Rose, Shamrock, and Thistle are in natural colours. Above the crest is the eye in proper colour, above this, the white dove is flying with a sprig of green leaf. Around the base of the architectural arrangement, which is a cream marble colour, are figures representing arts, music, and science. The four circular panels, with the emblems before mentioned, are in proper colours. The arms of the different countries are in heraldic colours. Angels are seen clad in white, appearing out of the clouds on either side of the central group. The whole is enclosed by a frame of gold and various colours.

FORESTERS

Below the Eye (which is in natural colour) is the crest, the stag, in proper colours, springing from a golden jewelled coronet. The shield is divided by a green cross. In the first quarter, the hands are in natural colour on a red ground, second, the stags are gold upon a green ground, third, the chevron is red on a gold ground. The Agnus Dei in the upper half is white, the horn in the lower half is gold, tied by a blue ribbon, fourth quarter on a red ground, the bow, arrow, and horn (tied with a blue ribbon) are of gold; the quiver is green, with gold arrows. The smaller shield has a red ground, the three arrows, the bow, and the horn (tied with blue ribbon) are of gold. The female forester on the right is clad in a green hunting habit, trimmed with fur, and red feathers in her hat, holding a bow in her left hand, and greeting with her right, the male forester, who is attired in a green tunic, belt, buff tights, top boots, and hat with red feathers, holding in his left hand a bow, and greeting the female with his right, a horn is suspended from his belt, and by his side a deerhound, in its natural colour (grey). Below the shield, flowers of the Rose, Shamrock, and Thistle, is the motto, being in gold on a pink ribbon. In the background, in the green woodland, two hunters with a dog, chasing a stag, which is seen escaping on the left (all in natural colours). The four circular panels are in sepia.

DRUIDS.

From the green foliage of the oak the Eye looks down upon the Druid, who, being robed in a purple gown and a scarlet cloak suspended from the shoulder, and both trimmed with gold, supporting his golden harp points to the pink winged emblem with his gold headed wand. A green wreath of oak leaves encircles his brow, behind him rests the blue shield, with the crescent and star. The ancient Briton standing on the left is robed in skins of a brown colour. The shield he is supporting is blue with a green serpent surrounded with gold stars. The medallion suspended at his neck is blue, with a green serpent. With his spear he is also pointing to the emblem resting upon the Roman fasces, which is bound with bone cords, behind this the paschal lamb in natural color, the white dove flying above the stone-colored column, the gold Maltese cross, the beehive and cornucopia in natural colours, and the golden staff of Mercury; and in the green background stand a Druidical temple. The shields beneath the emblem are carried out in heraldic colours, and the medallions in stone colour.

SHEPHERDS

The architectural foundation is stone colour. The base is edged with gold, the pediment is of gold. On the right hand pilaster is a red shield, encircled with a crimson coloured garter, upon the shield is a golden star. On the left is the Royal Arms, in heraldic, also encircled with a garter. The landscape under the arch has a green background, the widow and children in black, the figure representing Charity robed in blue, red, and yellow, the figure emblematic of Hunger, Want, &c., in black, holding aloft a black flag, the device thereon being in white. Above this the Shepherd is attired in yellow with a crimson cloak, over his shoulder the golden crook by his side the dog in natural colours. The Shepherdess is attired in green having also a golden crook, the sheep in natural colours. Between the two figures is the shield, the cross dividing it being of gold. The "Adoration of the Shepherds" in the first division, in natural colours, in the second quarter, under a blue sky, stand the golden cross on a green hill, in the third quarter, two golden crooks on a blue ground, in the last division, on a red ground, is King David crowned with gold, robed in yellow, playing upon a golden harp. The drapery round the shield is red. Above the shield the cross of gold, encircled with laurel. The beehive in natural colour and the white dove in a ray of golden light are the crests. The motto is black, on a pink-coloured ribbon. The subjects on the span of the arch are in low relief.

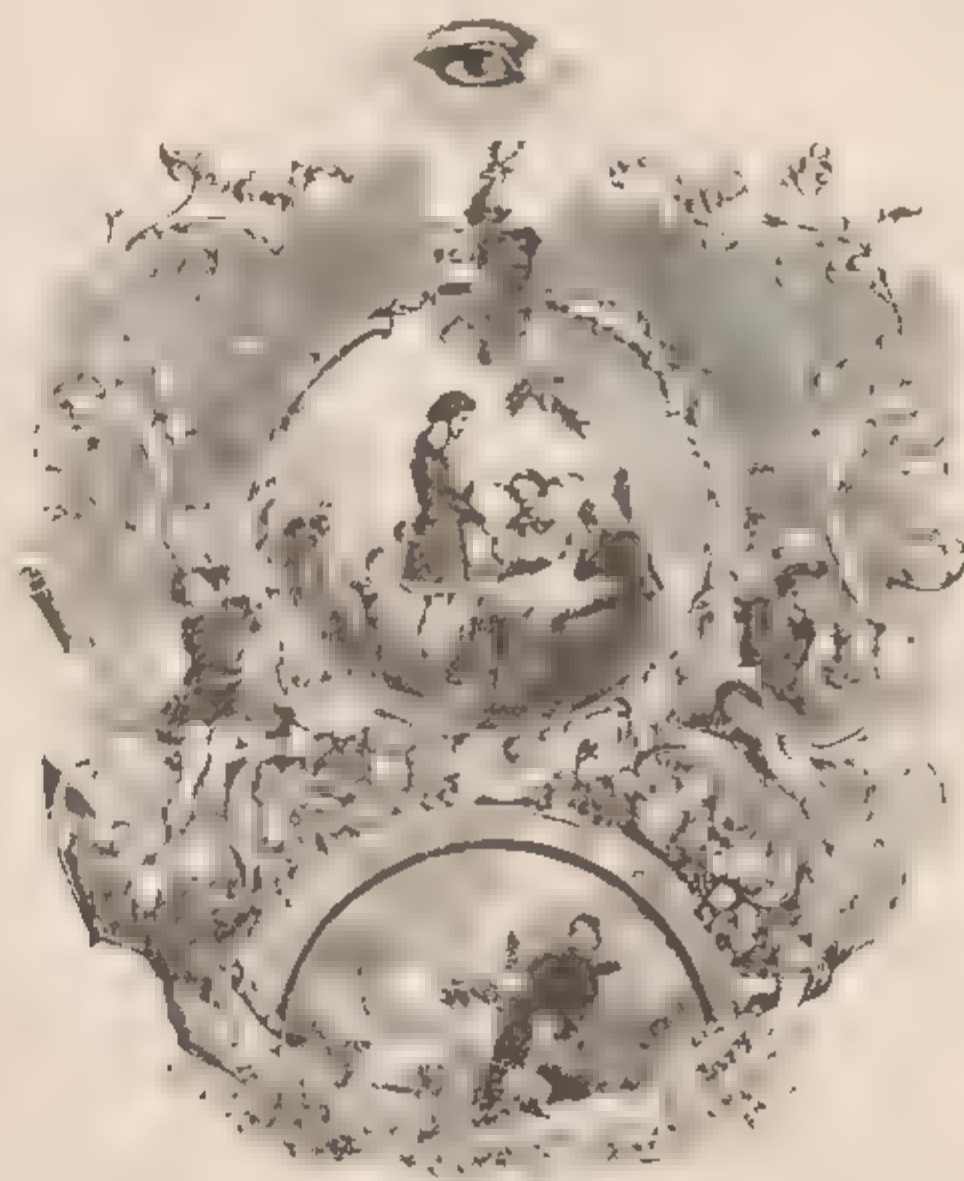
PER HABITES.

Shield the sun in the right corner is yellow on a blue ground, in the left corner the moon and stars on a blue ground, the Eye and lamb are in natural colours, the serpent is brown on a green ground, the doves are white on a green ground. Beneath this, on a golden chevron, are three tents, under this, the Rose, Shamrock, and Thistle, in natural colours on a yellow ground surrounded by a rainbow. The figure on the right is robed in green and yellow, having white wings, and holding in her hands a green olive branch. The figure in the left is robed in red and blue; the scroll in her hand white, and the rose in her hair red. At the feet of the figures are red and yellow roses. Above the shield are crests, the sword has a gold hilt, the olive branch is green, the wreath beneath the golden beehive is white and red, the wheat sheaf is yellow. The motto is on a pink ground. The three panels below the motto, the "Ark," "St. George," and the "Life Boat," are in natural colours. At the foot of the design, the Arms of Great Britain, America, Australia, &c., are lying among roses and lily flowers in

NOTE.—The Illustration on the first page of the preceding page is that of a Past Master's Certificate of the Order which, as will be seen, differs somewhat from this Emblem as described.



THE ANCIENT ORDER OF UNITED WORKMEN.



THE ANCIENT ORDER OF DRUIDS.



THE ANCIENT ORDER OF SHEPHERDS.



ANCIENT ORDER OF DRUIDS

In bringing our work to a conclusion it may be permitted us to summarise the essential points raised in the foregoing chapters, and to give to the young sign-writer, anxious to make his way in his business, a few hints to keep ever in mind.

A famous political leader once gave to his party, as the most important duty incumbent upon its members, the following injunction thrice repeated, Register! Register!! Register!!! And to our young readers and students of any age we can offer no more urgent or imperative advice than Practise! Practise!! Practise!!! In that word lies the beginning, the middle, and the end of a successful career on the part of any student. Practise early, practise late, practise at the beginning of the day, and practise at its end. Genius has been described as the faculty for taking pains, and though this does not exhaust it, it is a great part of it. No talent is serviceable to its owner or to the community unless it is used, and the old fable of the Hare and the Tortoise is exemplified many times over in daily life, where we find the youth of moderate ability but with strong application to his work, outstripping his fellow-man who is much more richly endowed in mental talent and artistic gifts. The point, therefore, is to steadily stick to your study; never mind the eight hours' day, or the many distractions which nowadays appeal so strongly to the youth, and which are permitted in thousands of cases to usurp the position of serious business. The student should disregard all these, and keep steadily in front of him the aim and purpose of becoming master of his craft.

There is a school of thinkers and writers of to-day who look, or profess to, with absolute horror on the fact of a boy working past a specific time. The fact is, no progress is at all possible to a boy or a man who regards his work as so many hours' drudgery, to be left at the earliest moment and to be returned to with the greatest reluctance. A great American author, writing to a friend in this country, wittily said: "I hope you are well and busy," which is another way of saying you are happy. Work, hard work, cheerful work, is the secret of character, and we would distrust all advice to the contrary however sympathetic it may appear to be.

PRACTICE MAKES PERFECT

The next point we would impress on the student is that practice makes perfect, and that herein lies the explanation

of success which is often attributed to other causes. Not once or twice, but scores of times have we heard people attributing successful glass-gilding to some secret process, or the use of some secret vehicle. It is all pure delusion. The brilliancy of the gold, and the clear, sharp, well-shaped letters are due to expertness in using simple things and cleanliness in working. This comes of long practice, which will doubtless inform every man of better ways of avoiding difficulties, and better methods of improving the work which no printed recipe could convey to him. It is, therefore, very desirable that students should not be found sheltering their failures behind "special methods" of which they are in ignorance. The methods herein set out will give good results if followed, with attention to materials and tools being clean.

GOOD MATERIALS

Further! The question of good materials is one which is all important to the glass sign-writer. We know the old adage, "A bad workman lays the fault on his tools," and there is undoubtedly something in the saying—but other things being equal, the man with pure materials is likely to succeed better than the man with bad paints. It is, therefore, important to the decorator to use only the best material, and especially is this so when, as in sign-writing, the material (except gold) bears so small a relation to the general body of the work. The elements, therefore, for good sign-writing are, constant practice, cleanliness in

methods, and good material. Given these, we feel assured that no one need apprehend failure in their endeavours.

BRASS AND COPPER LETTERS

During the last 20 years many kinds of letterings have sprung up, many of which have much to commend them to the public eye. These may be classified into two divisions, those that are fixed *outside* a window or sign, and those that are fixed *inside* a window or sign, or concave and convex letters. The difference is important and radical, as the mere statement as to which side they are fixed declares the character of the letter. For instance, a solid letter must of necessity be fixed on to the front of the glass. A convex letter must of necessity also be fixed on to the front of a window, whereas a concave letter must equally be fixed to the back of the glass.

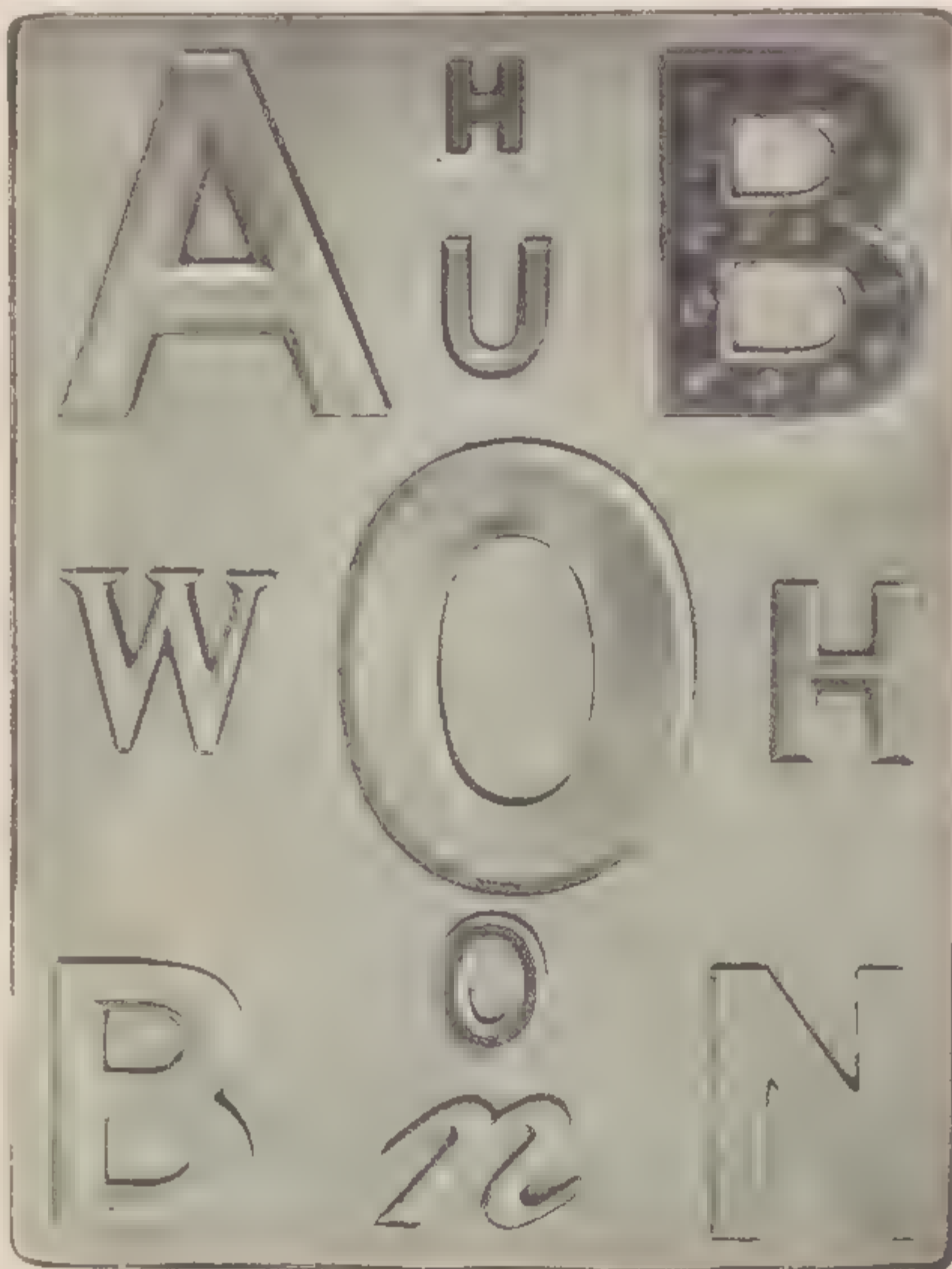



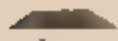


FIG. 1. VARIOUS STYLES OF GLASS LETTERS

— Solid copper and brass letters, in the manner of French letters, have been much employed for external application, and very elegant and stylish do they look; the drawback to them is they require daily cleaning or they get tarnished directly, and the cleaning oftener than not spoils the windows

— The opposite of these are the concave letters. These are generally in stamped copper, with the inside face gilded and fixed *against* the inside of the window.

— In fixing these against the inside of a large window, it is usual to first outline, with a *black* outline, the letters on the window a trifle larger than the letters, and the outline is usually about $\frac{1}{4}$ th of an inch thick. When this is dry, the small lip which is attached to each letter is covered with a cement and carefully pressed against the outline on the window. The face side shows a black outline with a concave gilded letter.

GLASS LETTERS.

There are many varieties of glass letters, but they have this in common, that they are fixed *outside* the windows. In section, they vary: some are  V shaped, others are  flat letters with a small bevel ground on the edge, others are flat with a broader bevel  on the edge, others again are cast with a broad bevel and a narrow flat . Some are further elaborated by jewelling, and by the imposition of coloured glass, but these are "fancy" letters and only occasionally used; most of these are gilded behind and then fastened to another glass letter at the back, so that the gilding is thoroughly protected from danger of abrasion. Opal letters, with bevelled edges gilded, make a very refined and elegant letter for affixing to a window, and are much affected by certain high-class establishments.

WHITE ENAMEL LETTERS

Other letters much in use are the white enamel letters. These, in sections, are slightly elliptical, and have a slight lip on. They are fixed to the outside of windows, and are generally secured with a stiff cement made of white lead and japanner's gold size


MARbled AND GRAINED FASCIAS.

In connection with the concave letters, many very interesting signs have been made, giving a variety of surfaces. For instance, a marbled glass fascia is required with gold sunk letters. The following is one method: The glass is procured, and the brass concave letters are made. The outlines of these are then carefully traced, and a pounce is made and the outline transferred to the glass, and a black or brown outline is then painted on. When this is dry, we proceed to paint on the ground any marble we like, Bardiglio, Dove Siena, &c., carefully keeping the letters free and clean. When our marbling is dry and properly grounded from the back, we have a sign with perfectly clear glass where the letters are, outlined with black and with a marbled ground. We now take the letters and fix them against the clear openings from behind the outline, and the fascia is then ready to fix into place.

WOOD AND GLASS SIGNS

Another method of using concave or sunk letters is as follows. We are still dealing with a fascia. We take a pine board the full length of our fascia, and carve out of it, or carve into it, the name we have to place there, say it is

J. C. M. VAUGHAN

We cut these on the fascia  V shape, and then carefully paint them and prepare them for gilding, which is done in the ordinary way. We now take a glass the exact size of the fascia, and by a pounce transfer on to the glass the shape of the letters J. C. M. Vaughan. We now gild, by the usual method, an outline round these letters, $\frac{1}{2}$ inch, $\frac{3}{8}$ inch, or $\frac{1}{4}$ of an inch thick, according to the size of the fascia and the

letters, and back it up (outline only) with black japan. We next clean the glass, which now presents the appearance of a simple gold outlined letter.

Using rich mahogany lake and browns we paint in the background to represent mahogany, and when dry we ground it in *behind* our glazing with a solid colour. We now have a mahogany ground with gold outline and clear glass letters, but when this is laid in front of the wood fascia we have a gold letter and a gold outline. This may seem a superfluity, but it is not so, as the brilliant gold outline makes a most agreeable edge to the duller gold of the sunk letter. It is like matt gold, and burnished gold, and the effect is equally agreeable

THE ADVANTAGE OF A GRAINED GROUND

It may be objected: But why not use mahogany itself and simply sink the letters in and gild them? The answer is, that the method described above yields a very much richer and effective result than by simply using the mahogany itself.

SOLID WOOD LETTERS.

Wood letters are very familiar things, and are very effective as advertisements. They need very well seasoned wood for making them from, and it is better to use half inch stuff glued two thicknesses together, cross-grained, as the tendency to warping is thus counteracted.

We have seen large signs with wood letters fixed on them, and where this is the case the general flat effect is often very uninteresting. In the case of large fascias with solid wood letters on, this is frequently so. There are two ways to effectually counteract this. One is to cover the ground with a small enrichment of raised material, say Linerusta-Walton, and the play of light thus given to the ground causes the plain surface of the projecting letter to stand out with a double brilliancy. The other method is to reverse the process, and cover the surface of the letter with an enriched material. The texture thus given to the letters in contrast to the plain ground is equally effective in the way of causing the letters to stand out from the ground.

MEMORANDA TO STUDENTS.

As a last word we would say to all our students: Aim first at simplicity in your effects, both in your letters and in the arrangement of your signs. Never let your announcement be obscured by fussy setting out or ornament. There is a proper enrichment to signs, and there is an enrichment that is improper because it absorbs the announcement, and thus defeats the main purpose for which the sign was made and painted.

Contrast your rich colouring in your lettering by a quiet background.

Where using raised letters and shaded, avoid over-thickening your letters, as it makes them clumsy

Remember that it is better, and makes a more elegant letter, to have the side or thickening of the letter *less* than the width of the letter itself.

Soft, transparent, cast shadows are much more effective than solid, strong ones, except when the sign is a distance away.

A dark letter on a light ground requires a gold outline to soften it into the ground and avoid harshness.

A light letter on a dark ground should be outlined darker than the ground.

Thus, a silver letter on a red ground should have a warm black outline

Silver on a blue ground would gain by a gold or a dark chocolate outline on glass

Silver letters look well on a gold ground, but require outlining with a dark colour and a soft shadow.

Gold looks well on any coloured ground, but where the ground is lighter than the gold the latter needs to be outlined with brown or black

THE SIGN-WRITER AND GLASS EMBOSSEY.

59

SOME COLOUR SCHEMES FOR GLASS SIGNS.



GLASS signs require more elaboration than wood signs, due, probably, to the greater brilliancy of the surface, which will carry off richness better than wood.

A gold letter on a black sign (wood) is not incongruous, but a gold letter on a black background (glass) looks very bad and meagre, and suggestive of a funeral establishment.

A gold letter on a chocolate ground would look better on glass than wood, as the glass

would give brilliancy to the ground colour.

Raised and shaded letters always show to greater advantage on glass, due to the cause we have already stated.

Gold letters, matt centres, with bright gold outlines, raised or thickened in shades of brown, from a pale cream on the high lights to a rich deep yellow ground on the shaded parts, and with cool grey cast shadows, look well on a white ground.

A chocolate letter on a cream ground is enriched by the addition of a yellow line a slight distance away from the letter; the distance and strength of the line would be dependent on the size of letter. This treatment does not detract from the readableness of the letter, a point always to be kept in view.

Gold letters with chocolate outline, thickened with shades of blue, from pale to deep, and cast shadows of reddish brown on a full yellowish-cream ground, make an excellent combination.

Letters on a gold ground may be written either plain or raised and shaded. A chocolate letter on a gold ground looks well, but it must always be sharp in colour, not indeterminate. Black on a gold ground should be warmed by the addition of red.

A gold ground is a good field to raise and shade upon, but in this case the letter itself is always better for being dark and the thickening and shading light.

In the use of thickening to letters, it should always be borne in mind that it is quite subsidiary to the announcement, and is only employed to enrich—not to suffocate—the writing.

A very deep chocolate ground, with gold letters outlined with white, looks effective; and a bright red (vermilion) on the same background, and outlined white, is also very telling.

A vermilion ground, with warm black letters and gold thickening, is very telling; but a gold letter on the same ground (vermilion) needs a good dark outline to separate it and make it effective.

A blue ground, gold letters, with black edge, thicker on one side than the other, looks well; and a pure white letter, edged with fine soft shadow line, goes well with the gold letters.

A bluish green ground, with deep blue letters, thickened with gold, looks well. On the same ground a gold letter, with fine white outline and chocolate thickening, is most effective.

A pale yellowish-green ground, with dark chocolate letter and gold thickening, makes a good sign. A deep neutral green on the same ground, with gold edge, looks well.

A grey-green ground, with creamy-white letter, thickened with shaded vermilion edges, and a transparent cast shadow of bluish green, makes a striking sign.

A greenish cream ground, with a dark letter (bluish-green) thickened with a pale olive-green, running up to a white edge on one side, and a cast shadow of a pale warm umbery brown, is very effective.

A neutral green ground, with vermilion letter outlined with fine black, thickened with a dull stone brown, running to orange on the edge and high lights, and chocolate in the darkest shadows, with a faint transparent cast shadow of warm green, is a novel and striking combination.

ETCHING FIGURES, &c., ON A GOLD GROUND.



THIS is a phase of the sign-writer's work which is rarely done by anyone who can draw, and gives very direct results. For figure work it is admirable, and very effective.

Gold etched with the details etched in black, if carefully drawn, look very well on a white ground. A letter broken with the amount of detail as the T annexed would look well in this treatment. We don't give the letter as an example to copy, but as

an example of the amount of work for etching.

Very beautiful work on glass is possible by this method, which is not to be confused with the etching by acids. The present process is very simple, and capable of yielding very beautiful results by anyone who can draw well.

We will take the letter G at the head of this page—any letter will do equally well—and will assume that the letter and ornament is to be gold on a white or coloured background. We draw the letter and ornament carefully on a piece of paper, and make a very fine pounce. A good draughtsman would depend on his own knowledge for much of the detail, and content himself with the main lines, but a less experienced man must make a careful drawing. He then grinds his glass solid, and when dry pounces his design on to the gold the reverse way. He now takes a piece of boxwood pointed like a pencil, and sketches in his outline and shadow lines so that his gold is left as the high lights. He will get his shadows by fine lines like an engraver does. Having completed his drawing, he now takes some black japan, and with a fine brush paints in the letters and ornament at the back solid black, going outside the letters and ornament just the strength of the etched line. When this is thoroughly hard the surplus gold must be cleaned off with a little cotton wool slightly dampened, and carefully rubbed round and round, but not so hard as to curl up the black. Polish with a dry leather. We now have a gold letter and ornament with black outline on a clear glass ground, and we can then paint in the background inside the G one colour and outside another. The letter could be done in gold and the background ornament in silver if desired. We are sure that many other variations on this will suggest themselves to our readers, and much artistic work is possible by this method.

TICKET-WRITING.

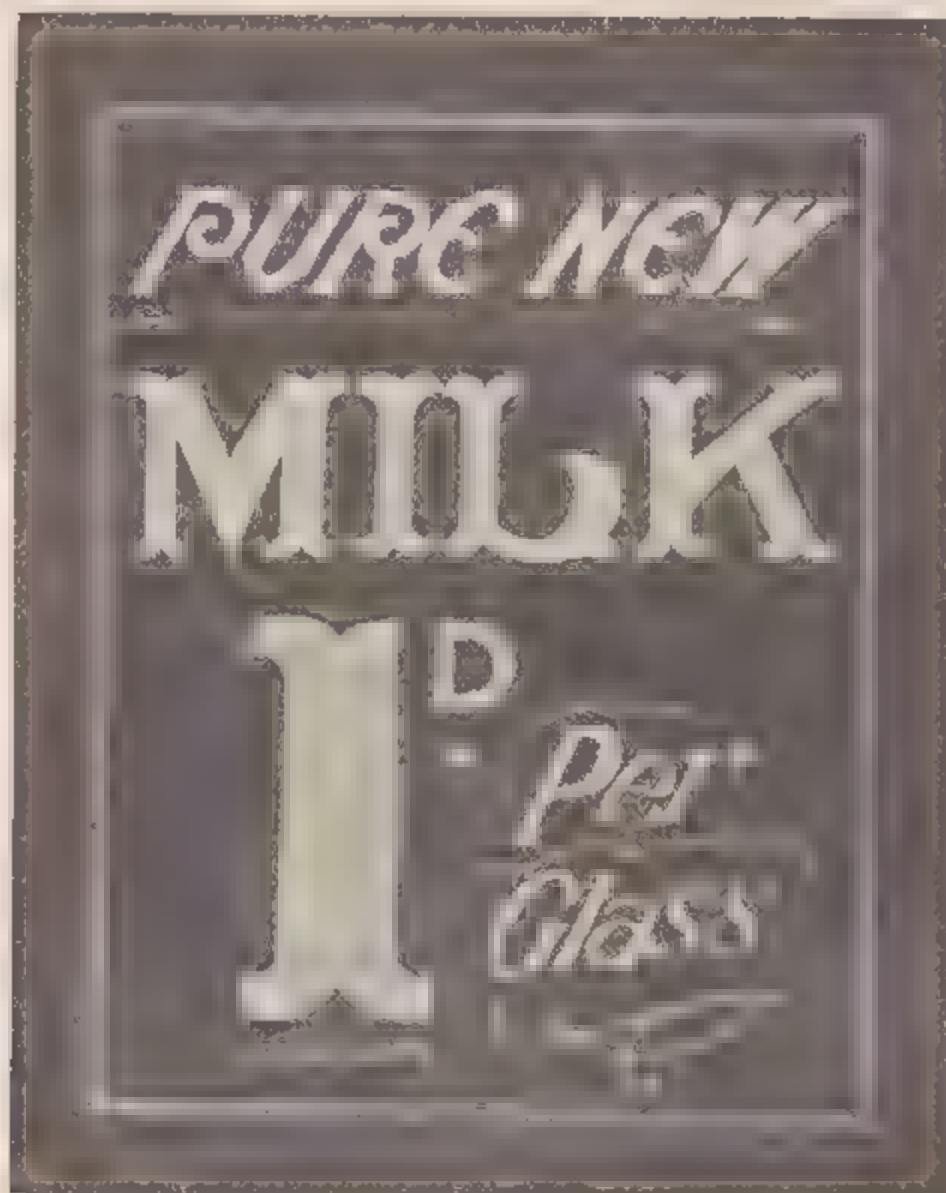
The writing of tickets is an excellent school for the sign-writer, as it gives him a freedom of touch and opportunities to exercise his talent that later on are invaluable. Indeed, we could not recommend a better field to practise upon. We are all familiar with the freedom of the drawings of Japanese artists, the entire absence of constraint in the technique. This is largely, indeed almost entirely, due to the fact that the Jap artist works entirely with a brush; consequently he attains to a delicacy of touch, coupled with a freedom of movement, that no other course of study can equal.

The materials for a ticket-writer's outfit are: some pieces of cardboard, a two-foot rule, a straight-edge, some camel's hair brushes, some sable brushes, lead pencils, and inks.

The following pencils are best for a beginner: a small swan, a small goose, and a duck. These indicate sizes of pencils. An expert writer would make one brush answer, but this later on; for the present the three we have named will do.

The ticket is ready for setting out, and we therefore mark with very fine, light lines the limits of the letters, and then lightly sketch out the letters themselves. Now we take the "duck" pencil, and outline them in.

An experienced ticket-writer gets so facile in his work that a few dots will suffice for him to set out his ticket, but this



EXAMPLE OF WINDOW TICKETS IN COLOURS

power comes only at the end of years of practice. The writer who is only on the threshold of his work will need to go slowly and even laboriously in his first steps, conquering each position before going on to another.

Where there are a number of tickets with the same writing on, a carefully-prepared pounce might be made and used, as it would facilitate the working and the correctness of the setting out.

The setting out of a ticket is an art which can only come by long practice and observation. It is the touchstone of a man's quality, and the secret of success. Of course there are many tickets with only one or two words on them; these resolve themselves readily, and there cannot be much mistake, but where there is a ticket to be written with a good announcement on, the taste in setting out becomes a crucial question.

A case occurs to us as we write. We recently saw in an office window the following announcement of removal:—

TO LET.

REFRIG. TO

1, YORK ST.

AS IT WAS

TO LET.

REMOVING

TO

1, YORK ST.

AS IT SHOULD HAVE BEEN.

The important point, namely, the announcement that they were removing, was so small that across the street the ticket read—

TO LET. 1, YORK ST.

An obvious missing of the salient point of the announcement.

It is, therefore, of supreme importance to cultivate the quality of settling at once in the mind, which are the lines requiring prominence, and which are those that can be made subsidiary.

We would offer to the student the advice that his aim should be to acquire rapidity of action in the formation of letters, and this is best attained, in the first instance, by the student endeavouring to make his lines by good, firm sweeps, not to niggle with short strokes, which are not only never satisfactory but give a cramped action to his style. It may result at the first in many blunders, but it is, nevertheless, the surest way to acquire command over the hand and the brush.

It is also well for the student to endeavour strenuously, and always to work with the end of his brush, not the side. A good glass-painter, for instance, always works with the end of his brush: it contributes to better work and freer handling. So in ticket-writing: outline your letters first with the finer pencil, and then fill in with the swan's quill.

The ink of the ordinary ticket-writers may be bought ready made, but it is made very simply by the student himself. Gum arabic is the medium used, and is easily procurable at any chemist's shop. There are cheaper and dearer qualities.

ONLY 7 1/2

CHEAP 5 1/4

and it is always the most economical to get the best. The gum arabic is dissolved in clean water, $\frac{1}{2}$ lb of gum to 1 pint of water, and care should be taken to keep it free from extraneous substances.

To this, for black, we break up on a palette vegetable black, and add the medium to it in quantities sufficient to make it work easily. For red, the addition of vermilion will do. For blue, cobalt is a good blue. For green, dry emerald green. It is not often that yellow is used, except as a shadow, and then raw sienna ground in water is the best.

All the colours wait tempering well on a slab or piece of glass, and a bone palette knife is better for the vermilion than an iron one.

We have given our readers the essentials of ticket-writing; the rest that re-

ONLY 10

CHEAP 9

CHEAP 7

ONLY 5

NEW 9

NEWEST DESIGN

EXAMPLES OF SIMPLE BLACK AND WHITE TICKETS

means is the addition of brains, to observe and study, and skill to execute—what comes by practice.

TIN TICKETS

Much beautiful decoration has been done by the use of lacquers on tin, the bright tin forming a ground on which the lacquers are laid according to the purpose and wish of the artist. The tin forms a silver white ground, and in the hands of a clever man much may be made of it. The lacquers used are the spirit lacquers, and may be obtained from Messrs. Wilkinson, Herwood, & Clark, or Messrs. Harland & Co.

The design is pounced on and outlined, any colours are laid on in the transparent stains. Then the background is painted in solid colour, and the whole varnished—a simple and ready way of getting good effects.

PRICE LIST OF SIGNS & WRITING.

WORD SIGNS.

1 in. plain, the sign without wood with buttons, 9d to 1s. per super.

Sign, 1 in. plain, clamped and slotted, and rounded on the edge according to the design, 1s. 6d. to 1s. 8d. per super foot. Painting to the contents and varnishing 1s. 6d. super per yard.

WRITING

Writing is always charged for per inch, measuring only the height of the letter.

In the writing of notice boards, when there is a continuous quantity of writing in order, any type not displayed, the price is usually charged for per dozen inches.

Black or coloured letter on white, 9d. per dozen inches.

Ordinary displayed writing, 1d. per inch.

The scale of charges is modified if there is any difficulty of access to the work, allowances being made for such extra time.

It may be as well if for the purpose of our Price List we take some of the letters of our Coloured Plates.

Plate I.—A sign such as this is cannot be measured up by inches, the writer

would have to calculate the time it would take him to do it, and charge out as time at so much per hour or so much for the sign, as regarding inches.

Plate II.—B, H, Y, K. Writing such as this with the detail on it as shown, would cost 4d. per inch up to 8 in., and 6d. per inch above this, the succeeding line, O, S, E, W. gold letters, outlined, thickness, and cast shadows, would be worth 8d. per inch up to 8 in., and 1d. per inch up to 12 in.; A, E, G, M, N, O, P, Q, R, S, W, letters, in colour, raised and painted, and with cast shadows, would be worth 1d. per inch.

Plate VIII.—Letters outlined, thick, and with cast shadows, all in colour, 2d. to 3d. per inch.

Plate IX.—Solid letters edged with white on one edge and black cast shadow all in colour, 2d. per inch.

Plate X.—Letters formed of colour on ground with edging, shading, and with cast shadow, 1d. per inch.

Plate XI.—Embossed letters are not usually charged for at per inch, but so much for the job. They are more decorative work than sign-writing, and they

take more time to execute properly than does the ordinary type.

Plate XVII.—There is a general rule about the prices in this page. As is well worth 1d. to 4d. per inch, in colour the price of the others would be worth from 1d. to 2d. per inch.

Plate XVIII.—It will be seen that there are a great variety of letters here, and they consequently vary equally in price. The letters H and S in the top row would be worth 3d. per inch up to 8 in., on wood, and above that size the price would be 4d. to 6d. the letter B would be worth more than the others on account of the damascening of the thickness, R H from 8d. per inch, N from 5d. per inch, S from 4d. per inch, M from 4d. per inch, E from 1d. per inch, in colour, E from 8d., E from 3d.; A from 3d., R from 2d., A from 1d., D from 3d., S from 3d., E from 3d., R, gold ground from 1d. per square foot.

The above prices are for writing on wood signs, for glass work one-half more should be added to the prices quoted.

Gold lines are charged for at per foot run, from 3d. per foot, according to the width of the line.

Where there is any extra work it is additional to the prices quoted and is charged per superficial foot; 1s. to 2s. per square foot should be added for the embossing dependent upon the amount of work involved.

Embossed Glass. Price per superficial foot from 1s. 6d. to 5s., according to the amount of work on the glass.

Brilliant Cut Glass.—This is charged for per superficial foot and again is dependent on the exact amount for the quantity and character of work involved. It should be charged out at from 4s. to 20s. per foot, additional to the price of the glass.

Leveling is always charged for per inch, and should be priced out at from 1d. to 2d. per inch.

11 K. T. S.

The prices of tickets run from 9d. a dozen up to any sum, according to the size and the amount of work upon them. In establishments devoted to Ticket Writing the work is done very expeditiously and cheaply.

THE SIGN-WRITER AND GLASS EMBOSSER

A SHEET OF CORNERS AND BORDERS FOR THE USE
OF GLASS AND SIGN WRITERS.



DESIGNED AND DRAWN BY THE LATE W SUTHERLAND.



BLANK

WOLFE'S CALLIGRAPHY

HOUSE PAINTERS
[SIGN-WRITER·GLASS·EMBOSSEY·GILDER·]
DEALER IN ALL KINDS OF WALL DECORATIONS
Wolfe's Calligraphy
Calligraphy
Calligraphy
All kinds of Calligraphic and Broomer Calligraphy executed



B H Y K

O S E W

A E C M

Q R S W

1. EXAMPLE OF RAISED SHADED LETTERS ON WHITE MARBLE GROUND
2. EXAMPLE OF RAISED SHADED LETTERS ON DOVE MARBLE GROUND

100

100

100

A B C D E
F G H I J
K L M N O
P Q R S T
U V W X
Y Z &

EXAMPLE OF BLACK LETTER INCISED ON GRIOTTE MARBLE GROUND



A B C D E

F G H I J

K L M N O

P Q R S T

V W X Y Z

1 2 3 4 5 6 7 8 9.



A B C D E
F G H I J K
L M N O P
Q R S T U
V W X Y Z



A B C D E
F G H I J
K L M N O
P Q R S T
V W X Y Z
1 2 3 4 5 6 7 8 9 0



A B C D E
F G H I K
L M N O P
Q R S T U
V W X Y Z

11







DESIGNED AND PUBLISHED BY THE DECORATIVE ART JOURNAL CO. LTD.

FANCY BLOCK LETTERS WITH SERIFS

DESIGNED AND PUBLISHED BY THE DECORATIVE ART JOURNAL CO. LTD.



A B C D E
F G H I J
K L M N O
P Q R S T
U V W X
Y Z &



ing unto the ORD

TEACH ME THY S

Joy and Gladness

Praise God

Beauty & Holiness



A B C D E F G
H I J K L M N
O P Q R S T U
V W X Y Z.

abcdefghijklmnopqrstuvwxyz.

abcdefghijklmnopqrstuvwxyz.



A B C D E F G H I J
K L M N O P Q R S
T U V W X Y Z . & c.

A B C D E F G H I J
K L M N O P Q R S
T U V W X Y Z . & c.

A B C D E F G H I J
K L M N O P Q R S
T U V W X Y Z . & c.



A B C D E
F G H I J K
L M N O P
R S T U V
W X Y Z &.



A B C D E F G H I
J K L M N O P Q
R S T U V W X Y Z.

N 1

A B C D E F G H
I J K L M N O P Q
R S T U V W X Y Z.

a b c d e f g h i j k l m
n o p q r s t u v w x y z.

N 3

a b c d e f g h i j k l m
n o p q r s t u v w x y z.

NU 4.



COLOURS PAINTS

CORDELOVA

LINCRUSTA WALTON

ANAGLYPTA

LIGNONUR

SALAMANDER

RELIEF DECORATION

HARLAND'S VARNISHES

WOMAN
CORPORATION

1821 W. 11th St. N.W.
WASHINGTON, D.C.

WOMAN CORPORATION

1821 W. 11th St. N.W.
WASHINGTON, D.C.

WOMAN CORPORATION

A B C D E

F G H I J

K L M N O

P Q R S T

U V W X

Y Z &

EXAMPLE OF RAISED LETTERS WITH CAST SHADOWS





H. E. L. L. A. W. & C. H. M. A. N. & C. P. R.

EXAMPLES OF RAISED AND SHADED LETTERS FOR GLASS AND WOOD SIGNS

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A B C D E F G H I
J K L M N O P Q R
S T U V W X Y Z &

a b c d e f g h i j k l m
n o p q r s t u v w x y z

1 2 3 4 5 6 7 8 9 0

a b c d e f g h i j k l m n
o p q r s t u v w x y z.

÷ 1 2 3 4 5 6 7 8 9 0 ÷
÷ 1 2 3 4 5 6 7 8 9 0 ÷
÷ 1 2 3 4 5 6 7 8 9 0 ÷
÷ 1 2 3 4 5 6 7 8 9 0 ÷



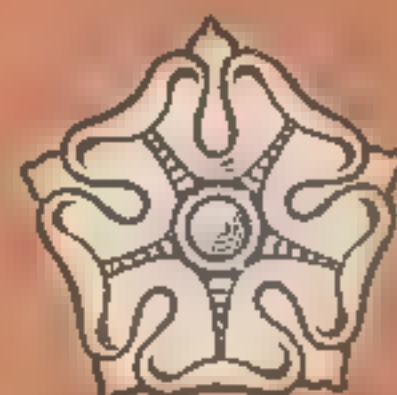
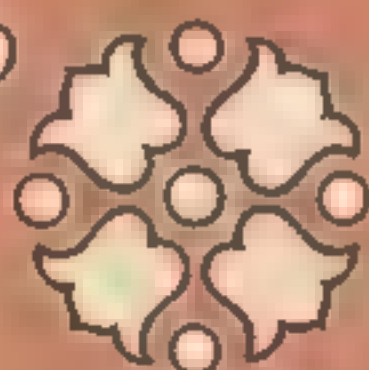
A B C D E

F G H I J K L

M N O P Q

R S T U V

W X Y Z







EXAMPLES OF CORNERS AND BORDERS FOR EMBOSSEY ON GLASS.

DESIGNED AND PUBLISHED BY THE DECORATIVE ART JOURNALS CO. LTD.





THE ROYAL ARMS OF GREAT BRITAIN AND IRELAND

DESIGNED AND PUBLISHED BY H. L. C. A. NEPP, DUBLIN





EXAMPLES OF FANCY ALPHABETS FOR GLASS WORK



ALEXANDER & SONS
HOUSE & CHURCH DECORATORS
SPECIALISTS IN THE DECORATION OF PUBLIC BUILDINGS

GRIFFITHS
JONES & CO

HOUSE PAINTERS
GRAINERS & MARBLERS

CARVERS & GILDERS · SILVERERS ·
ESTIMATES PAINTERHANGERS & DECORATORS ESTIMATES
FREE

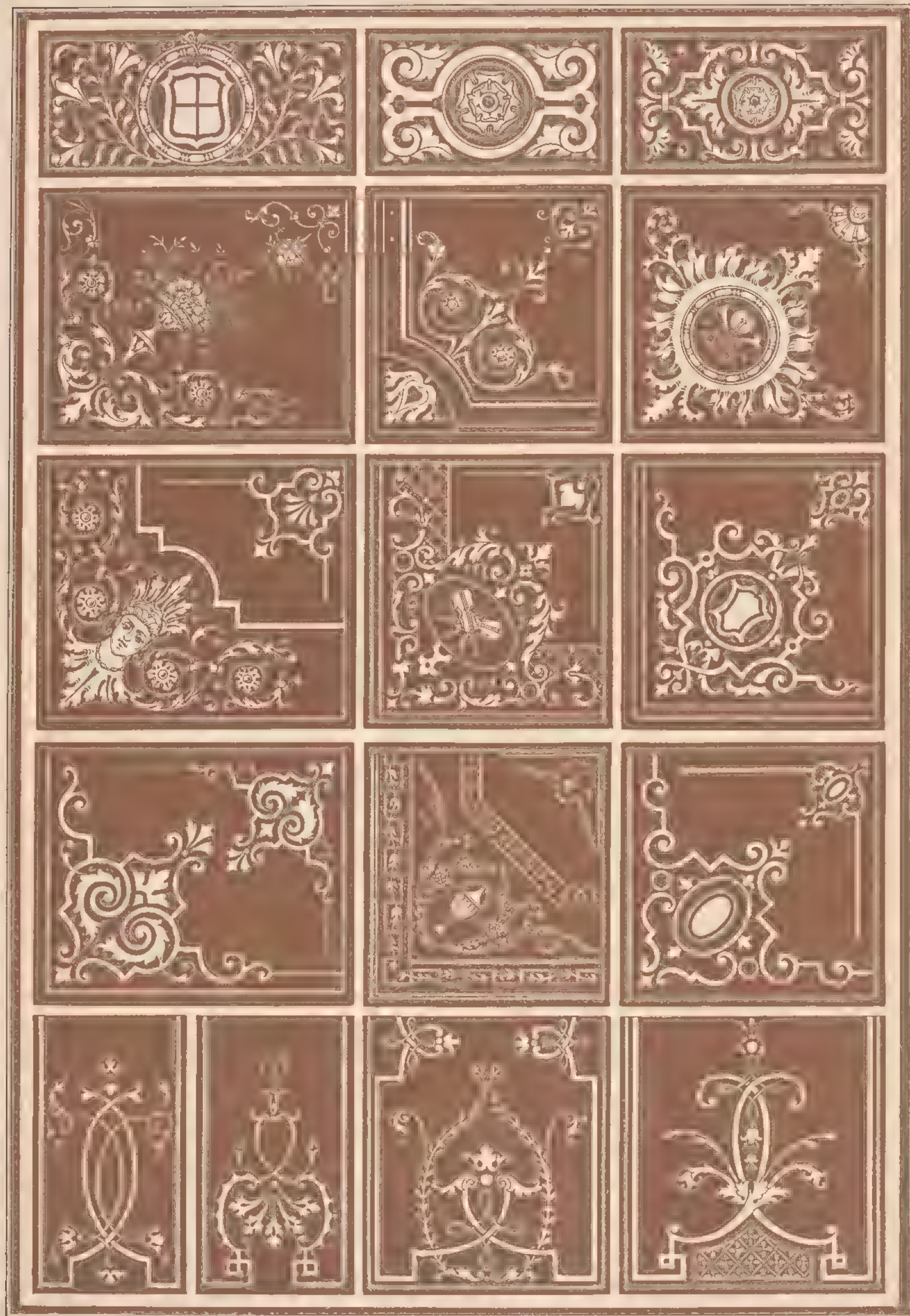
PRESTON

DECORATOR
OF
HOUSES & CHURCHES

SPECIALIST IN THE TREATMENT OF
LINCRUSTA-WALTON · ANAGLYPTA · CORDELOVA
SALAMANDER · LIGNOMUR · AND ALL RELIEF
MATERIALS · ESTIMATES FREE

GEORGE SPENCER
HOUSE PAINTER & PAPER HANGER



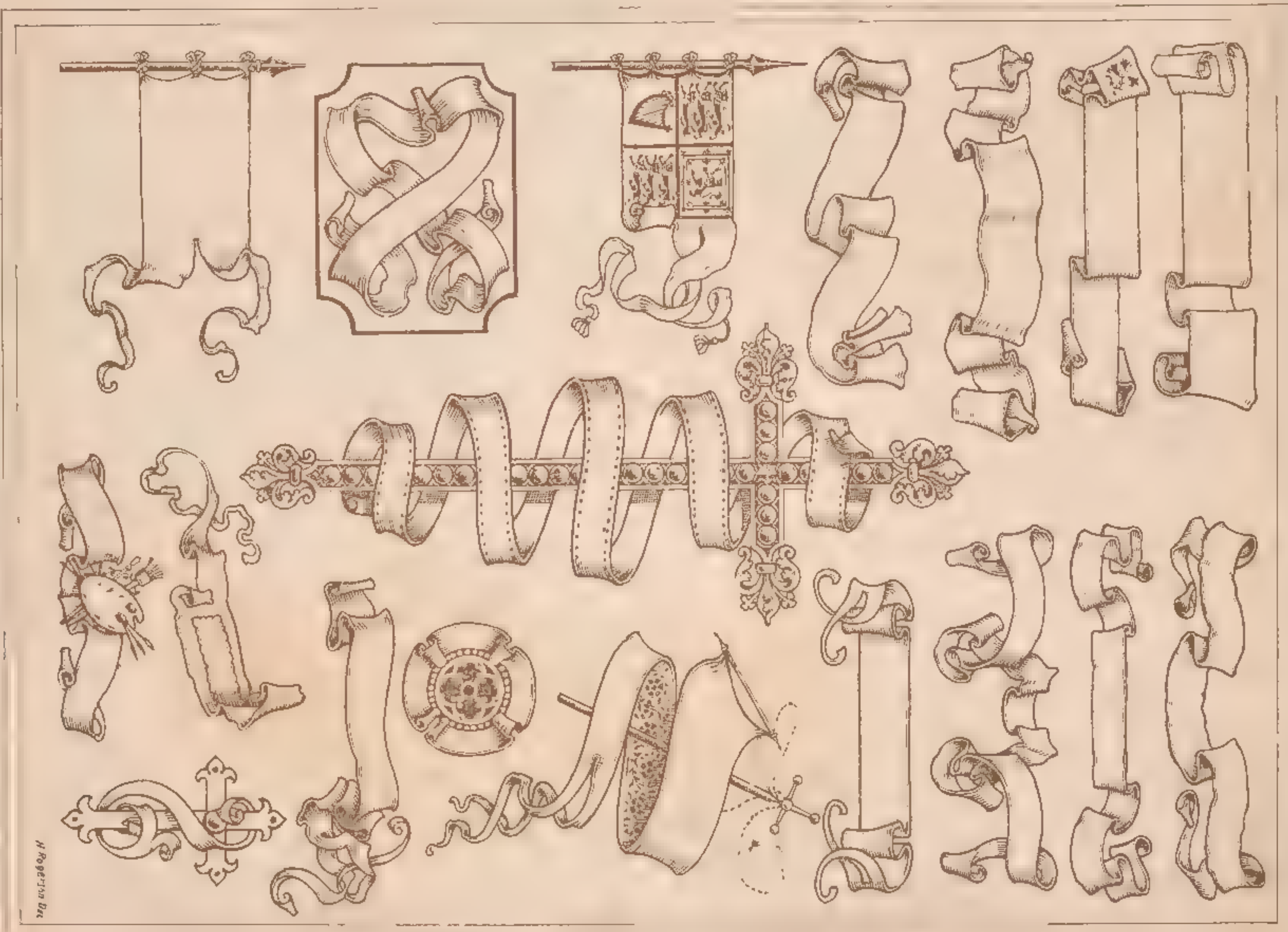


DESIGNS FOR EMBOSSED ON GLASS CENTRES CORNERS, &c

















CONCAVE AND CONVEX LETTERS.









Ribbons over Arches, Window-heads, etc.



Scrolls, etc., for Wall Decoration.



Emblems of the Passion.



Emblems of Christ and the Evangelists.



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